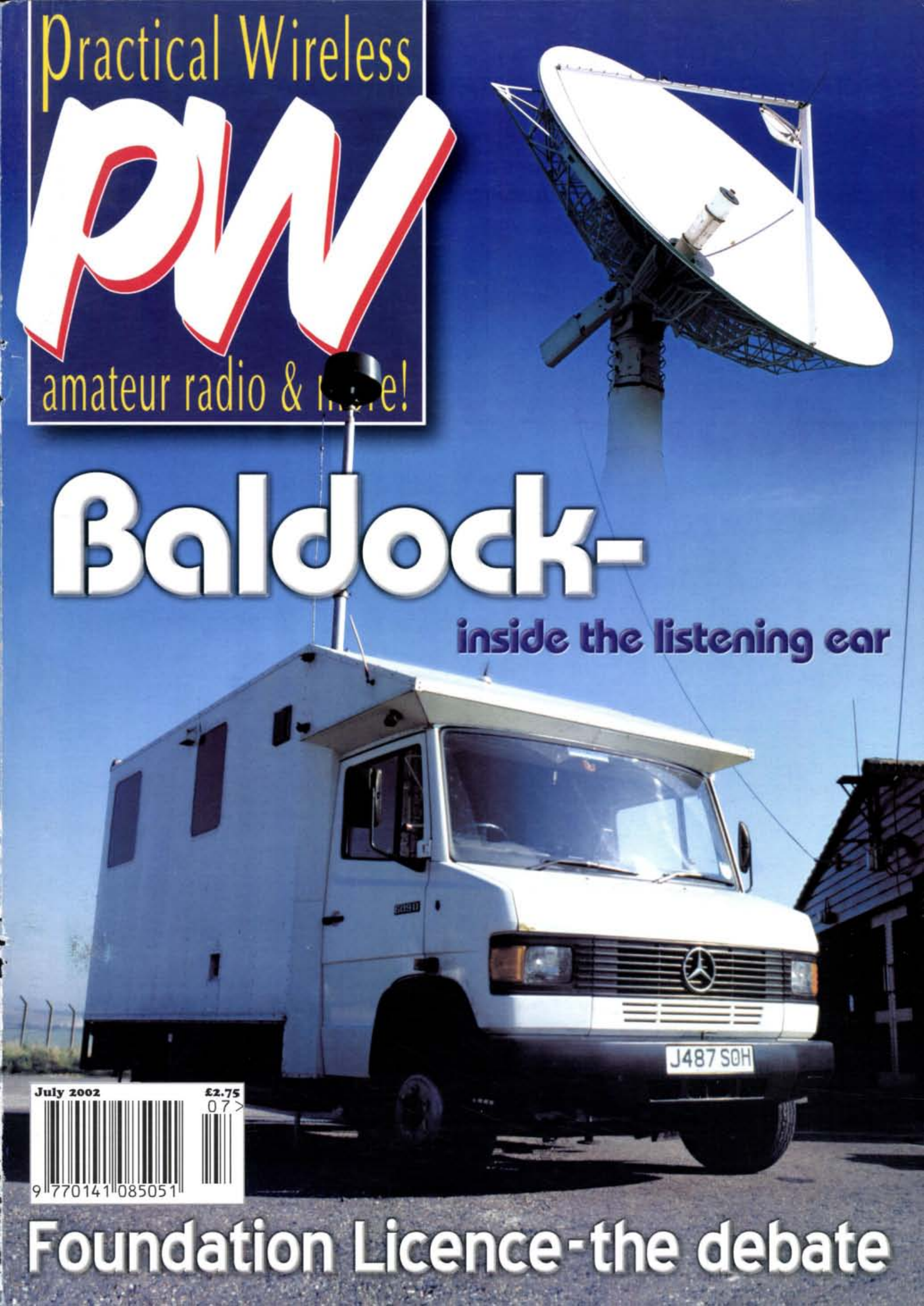
Practical Wireless
PW
amateur radio & more!



Baldock-

inside the listening ear

July 2002
£2.75
07
9 770141 085051

Foundation Licence-the debate

WATERS & STANTON

■ HEAD OFFICE 22 MAIN RD, HOCKLEY, ESSEX, SS5 4QS
■ MIDLANDS + NORTH SHOP BENTLEY BRIDGE, CHESTER
ENQUIRIES: 01629 582380 FAX: 01629 580020
■ SCOTLAND + BORDERS SHOP 20, WOODSIDE WAY, GLE
ENQUIRIES: 01592 756962 FAX: 01592 610451-CLOSE
■ web: www.wsplc.com Freephone Orde

PRICE MATCH

LOWE ELECTRONICS
BENTLEY BRIDGE, CHESTERFIELD ROAD.

MIDLAND BRANCH'S OPEN DAY!

Bargains Galore!

SATURDAY 7TH SEPTEMBER

10am - 4pm

WATERS & STANTON

LOWE

Free Refreshments
Free Parking

PRICE MATCH

YAESU NEW FT-1000MP MKV FIELD £2199 C

NEW

The Yaesu FT-1000MP Mk V has become the benchmark standard for HF transceivers, and has been used by more top DXpeditions than any other model. Now you can share this top performance at a very special price with the new "Field" model. This gives you all the superb features of its bigger brother, but with 3dB reduction in power output, making it the same power output as most other radios. But you will be ahead of the pack with the unequalled receiver performance and the ability to operate under extreme conditions and still pull out the weak signals. We think Yaesu have pulled off a master stroke here, because the price reduction will not affect the value of the 200 Watt version, but does bring the FT-1000MP MKV performance within reach of so many more customers.

YAESU NEW FT-897

NEW

100W HF 50W 2m and 20W 70cm
Plus 20W on (optional) Internal Battery
The FT-897 is modelled around the FT-817, but with 100W capability. It will take either an internal battery or internal AC PSU. Size is 7.87" x 3.15" x 10.3" approx. Available shortly.

YAESU

FT-1000MP Mk-V 200W HF ALL MODE
3 YEARS FREE WARRANTY

SPECIAL OFFER
FREE HEIL GOLD LINE MICROPHONE
£2899 carr:£9

FT-847 160m - 70cm ALL MODE
3 YEARS FREE WARRANTY

£1149 carr:£9

FT-100 D 160m - 70cm ALL MODE
SAVE

£899 carr:£6

FT- 920AF HF 160m-6m-100W

100 Watts from 1.8 to 54MHZ with dual VFO controls. Supplied with FREE FM unit.
£1099 carr:£9

FT-817 'SPECIAL OFFER' £595 C

The amazing FT-817 offers all-modes from 1.8MHz - 440MHz with up to 5 watts out. Buy one of our "WALKABOUTS" antennas at the same time and SAVE EVEN MORE! We will give you an extra 10% DISCOUNT on the antenna!

INCLUDES AC CHARGER
AND 1 AMP
Ni-cad PACK

NEW HEIL PRO-SET PLUS

£199.95 B

The PRO-SET PLUS is for contest and DX operators. Dual microphone inserts and acoustically tuned chambers for the speakers. A speaker reversal switch places the signal in the centre of your head or creates a spatial widening sound field. The headset is also the ultimate in comfort with full adjustments possible.

KENWOOD

TS-2000 160m - 70cms+23cms OPTION
3 YEARS FREE WARRANTY
+FREE HEIL HM-10 MIC

£1695 carr:£9

TS-570DG 160m - 10m All Mode
3 YEARS FREE WARRANTY

£849 carr:£9

TS-870 160m-10m 100W Advanced DSP

£1349 carr:£9

SGC

SGC SG-2020 £599 A

Ideal for QRP, but with VOGAD and RF speech processing it can sound like 100 Watts! Very low current (4A max) makes it ideal for portable work. Variable selectivity down to 100Hz means no extra filters to purchase.
NEW SG-2020 ADSP now available £799 carriage £9.00
SG-237 mini auto coupler ideal for SG-2020 £369

FREE SG-239 ATU (£239)
IN MAY, JUNE OR JULY

ICOM

IC-756 PRO II £2495 C
NEW

IN STOCK NOW!
This is Icom's new Flagship.

IC-7400 160m - 2m ALL-MODE
NEW

IN STOCK NOW!
£1499 carr:£9

IC-706IIG 160m - 70cm ALL MODE
3 YEARS FREE WARRANTY

£849 carr:£9

IC-718 100W HF £649 C

YAESU

VL1000 £3499 C

HF + 6m Linear Amplifier + PSU 1kW

ENQUIRIES: 01702 206835/204965 FAX: 01702 205843
FIELD RD, MATLOCK, DERBYSHIRE, DE43 5LE

NROTHES, FIFE KY7 5DF
O MONDAYS
r Line: 08000 73 73 88

CARRIAGE CHARGE CODES: A=£2.75, B=£6, C=£9 D=£12

DISCOUNT..... CUSTOMER SERVICE THE ONLY THING WE WON'T

Freephone Order Line 08000 73 73 88 • Freephone Order Line 08000 73 73 88

YAESU

FT-1500M • 2m FM Mobile £159 C

SPECIAL OFFER

'SAVE £70'

Small, compact yet built like a Battleship! Should last for years. Look at the Price!

KENWOOD

TM-D700E • 2m + 70cm FM £449 C

Large detached screen and APRS, make this a firm favourite. 50W on 2m and 35W on 70cms. Features 200 memos, CTCSS, Band Scope, built-in TNC, DX cluster monitor, alphanumeric etc.

TM-G707E • 2m + 70cm FM £289 C

If you are looking for simplicity and low cost, here's the answer. 2m &70cms with detachable front panel and "Easy operation mode." GREAT!

TM-V7E • 2m + 70cm FM £359 C

A lovely cool blue display, easy with 50/35W output. 50W/35W plus 280 memos and five storable operating profiles.

ICOM

IC-207H • 2m + 70cm FM £279 C

A great budget class radio for VHF & UHF use.

IC-2800H • 2m + 70cm FM £419 C

Large colour display with video input, and airband rx. 50W/35W and remote head unit.

IC-2100H 2m FM Mobile £229 C

Rugged design with switched receive filters 12.5/25kHz

IC-910 2m + 70cm All Mode £1299 C

Icom's new dual band all-mode base station radio with 23cms option.

YAESU

FT-7100 • 2m/70cm Mobile £299 C

SPECIAL OFFER £299

Just arrived is this new dual band radio that has extended rx. Power is 50/35W. Features dual in-band reception and detachable display (requires YSK-7100).

AMAZING VALUE

£25 ACCESSORY VOUCHER

KENWOOD

TH-D7E • 2m + 70cm £299 C

DATA COMMUNICATOR

One of the most successful handhelds over the past few years. It has a built-in TNC for Packet use. You can also use it for APRS operation in conjunction with an external GPS unit. Plus NMEA, 200 memos, and up to 5W output.

TH-F7E • 2m + 70cm £249.95 C

NEW

WITH EXTRA WIDE RX COVERAGE

- 144-146MHz Tx/Rx: FM
- 430-440MHz Tx/Rx: FM

Up to 6W out with Li-ion battery and "scanner" style coverage from 100kHz to 1300MHz including SSB on receive! This is a great radio to have at all times when you are on your travels.

THG-71E £199 B

- 144 - 146MHz FM
- 430 - 440MHz FM
- 3 power levels
- 6W (13.8V) 5.5W (UHF) HI
- 0.5W LO • 50mW EL
- 200 multi-function memories
- Freq. deviation: ±5kHz
- CTCSS tone encoder/decoder
- Illuminated keypad.
- memory name function
- Auto power off • Auto batt. saver
- Time-out timer
- 5.5 - 16V DC (13.8V)

HORA

HORA C-408 • 70cm £49 B

HOCKLEY ONLY

Very much underrated handy. Covers the full 70cm band. Wideband receive possible. Very compact fits into top pocket. Ideal for use at rallies. Only uses 2x AA batteries (not included).

- 230mW, CTCSS
- Digital Display

SPECIAL OFFER

YAESU

YAESU VX5R • BLACK OR SILVER £239 B

Tiny but incredibly rugged, the VX-5R provides transceiver capability on three amateur bands (50/144/430MHz) and almost continuous reception from 500kHz up to 999MHz.

YAESU VX1R • 2m/70cm £149 B

Ultra-wide frequency coverage which includes VHF and UHF TV audio, AM broadcast, FM broadcast and AM airband.

W-25SM 25AMP SWITCH-MODE POWER SUPPLY

THE QUIET ONE

Switched 230 / 115V AC input and fixed 13.8V output at 22 Amps continuous and 25 Amps peak. Over voltage and over current protected and fan cooled. Measures 180mm (W), 75mm (H) and 190mm (D)

£69.95 carr.£6

RIGblaster

IT'S NOT A TNC

PSK31, MFSK, MT63, SSTV, RTTY,AMTOR, CW, PACKET-APRS,HELLSCHREIBER, REMOTE BASE, METEOR SCATTER, CLUB GSTS, REPEATER CONTROLLER, VOICE KEYER.

RIGblaster Plus	£139.95B
RIGblaster M8	£109.95B
RIGblaster M4	£109.95B
RIGblaster RJ	£109.95B
RIGblaster nomic 8p	£62.95 B
RIGblaster nomic 4p	£62.95 B
RIGblaster nomic RJ	£62.95 B

RT-11 REMOTE AUTOTUNER £239 B

NEW

NEW FROM LDG

ASK FOR DETAILS.
ALSO AVAILABLE IN KIT FORM.

GZV-4000 40A 5-15V Switch Mode

- Output voltage 5 - 15V DC
- Output current 40A continuous
- Built-in cooling fan
- Supply 230V AC 50Hz
- Size 210 x 110 x 300mm
- Weight 3.5kg

£159 C

W-CRI PADDLE KEY £44.95 B

- Metal parts brass
- Hardwood base
- Size 145 x 80 x 50mm
- Weight 375g

W-GMP Morse Key £29 A

- Metal parts brass
- Hardwood base
- Miniature size
- Size 100 x 50 x 45mm
- Weight 150g

Kent Morse Practice Oscillator £19.50 A

- Size 160 x 55 x 97mm
- Weight 260g

'Amazing' MP-1 Variable Antenna 7MHz - 430MHz! 150 Watts

Use Portable, Mobile, Home or even balcony!

SLIDE TO CHANGE BANDS!!

It's sweeping America as the most versatile antenna for any location. Kit includes telescopi whip, variable coil, lower mast, base bracket (SO-239), clamp and optional wire radials (3m approx). Total height approx 2m. Will also screw directly into 3/8" mobile mounts. The whole antenna packs down to pocket size, yet puts together in a couple of minutes. And with the high Q coil, you get high efficiency. Take it with your FT-817 as hand luggage!!

£149.95 carr.£9

PBX-100 Portable HF £99 C

80m - 10m 200W

The PBX 100 offers 80m - 10m operation (max 4-bands at any time) with a height of just 3.6m. Supplied with ground spike, it takes seconds to erect, yet collapses down to little more than 1m. like all ground mounted verticals, it benefits from radials, and the radial wire is provided. Use it in the garden, in the countryside or abroad. SO-239 connection.

MP-1 Options

TRIPOD **£19.95 A**

Compact tripod for free standing MP1

MP-80M **£22.95 A**

80m Coil for MP-1 3.4MHz - 4MHz

FT-817 BRACKET

MP1 bracket mounts on side of FT-817

£19.95 A

WATERS & STANTON

Freephone Orders 08000 73 73 88

THE ONLY THING WE WON'T DISCOUNT... CUSTOMER SERVICE

PRICE MATCH

Get in Front with HUSTLER

CARRIAGE CHARGE CODES: A=£2.75, B=£6, C=£9, D: £12

5BTV

£209.95
Carr. £9.00

4BTV

£169.95
Carr. £9.00

HUSTLER®

BASE STATION ANTENNAS

Spec	5BTV	4-BTV
Bands	5	4
Coverage	80m-10m	40m-10m
Bandwidth 10-40m	Full	Full
Bandwidth 80m	100kHz	N/A
Resonance	1.15:1	1.15:1
Power	1kW CW	1kW CW
Traps	1" forms	1" forms
Tubing	1.25"	1.25"
Bracket size	1.75"	1.75"
Height	25ft 1" (7.64m)	21ft 5" (6.52m)
Weight	17lbs. (7.7kg)	15lbs (6.8kg)
Wind (112kph)	13kg	-

"I worked my first ZL while actually on the move using a Hustler whip" - Peter Waters G3OJV. Customers are also telling us how pleased they are with the base verticals. Check the prices!

HUSTLER Mobile Antennas

Model	Band	Bandwidth	Price
RM-10	10m	150-250kHz	£19.95 B
RM-11	11m	150-250kHz	£19.95 B
RM-12	12m	90-120kHz	£19.95 B
RM-15	15m	100-150kHz	£19.95 B
RM-17	17m	120-150kHz	£24.95 B
RM-20	20m	80-100kHz	£24.95 B
RM-30	30m	50-60kHz	£26.95 B
RM-40	40m	40-50kHz	£26.95 B
RM-80	80m	25-30kHz	£29.95 B

Model	Band	Bandwidth	Price
RM-10-S	10m	250-400kHz	£24.95 C
RM-15-S	15m	150-200kHz	£26.95 C
RM-20-S	20m	100-150kHz	£31.95 C
RM-40-S	40m	50-80kHz	£37.95 C
RM-80-S	80m	50-60kHz	£51.95 C

Lower mast sections

MO-1	54" (FOLD @ 22")	£33.95 C
MO-2	54" (FOLD @ 27")	£33.95 C
MO-3	54" (NON FOLD)	£26.95 C
MO-4	27" (NON FOLD)	£22.95 C

HEIL

GM-4	Hand Mic	£129.95 B
GM-5	Hand Mic	£129.95 B
HS-706	Single H'phone	£59.95 B
PRO-SET-PLUS	Headset	£199.95 B
Proset-4	H'phone/boom mic	£129.95 B
Proset-5	H'phone/boom mic	£129.95 B
Pro-5-4	Single H'phone/mic	£119.95 B
Pro-5-5	Single H'phone/mic	£119.95 B
AD-1	Cables Y, K, or I	£16.95 A
HM-10-4	Stick mic	£76.95 B
HM-10-5	Stick mic	£76.96 B
HM-10-Dual	Hand Mic	£126.95 B
CC-1	Cables Y, K, or I	£29.95 A
HC-4	Spare insert	£32.95 A
HC-5	Spare insert	£32.95 A

You can convert your mic to Heil by simply purchasing HC-4 or HC-5 insert.

CUSHCRAFT COMMUNICATIONS ANTENNAS

HF HORIZONTAL BEAMS + DIPOLES

When you buy an HF Yagi, you want quality and realistic performance. You also want to know you can get spares. We offer a wide choice with guaranteed spares availability. COUNT ON US!

MA5B	10-20m (5 band) 3 el 2.7m radius 1.2kW	£349.95 C
X-7	10-20m 7 el. 12.5 - 13dBi 2kW 6.09m radius	£669.95 D
X-740	40m add on kit for X-7	£299.95 C
A4-S	10-20m 4 el. 8.9dBi 2kW 5.49m radius	£599.95 D
A-744	Gives 40m or 30m operation from A-4S	£159.95 C
A3-S	10-20m 3 el. 8dBi 2kW 4.72m radius	£499.95 D
A-743	Gives 40m or 30m operation from A3-S	£159.95 C
A3-WS	12 & 17m 3 el. 8dBi 2kW 4.4m radius	£399.95 D
A-103	Gives 30m operation from A3-WS	£159.95 C
D-3	10-20m dipole element 7.86m 2kW	£249.95 C
D-3W	12, 17, 30m 17m dipole element10.37m 2kW	£249.95 C
D-4	10-40m dipole element 10.92m 2kW	£329.95 C
D-40	40m dipole element 12.88m 2kW	£299.95 C
Ten-3	10m 3 el 8dBi 3m radius 2kW	£189.95 C
ASL-2010	13.5-32MHz 8 el. log periodic6.4dBd 5.86m radius	£799.95 D

THE MINI-BEAM FOR SMALL GARDENS

Cushcraft MA5B

The best 3 element mini beam you will ever find. 2 element gain on 10, 15 & 20m, and dipole performance on 12m and 17m. Up to 25dB F/B ratio, it accepts 1.2kW yet has a boom length of only 2.2m and element length of just 5.2m Turning radius is 2.7m. Uses a single feeder, this really works the DX. Get one up before winter! £349.95 C

CUSHCRAFT VERTICALS

R8 (illustrated), covers 8 bands from 6m - 40m, stands 8.7m high and requires no radials. You can feed it with 1.5kW and typical VSWR is around 1.2:1 £499.95 C

R8-GK Optional guy kit for R8 £49.00 B

R-8000 6 band 6m-20m that requires no radials and handles 1.5kW. Stands just 5.8m high and was chosen for the RSGB GB4FUN vehicle antenna. It works!! £349.95 C

NEW MA5V VERTICAL 20-10m **£229.95 C**

WATSON

WEP-300B • EARPIECES £2.95 A

Over-the-ear earpiece, popular for security and emergency use. Its low cost and firm mounting even in arduous conditions make this a popular item. Fitted with 3.5mm jack plug.

WSA-1 PSK-31 Adaptor £39.95 B

All you need to connect up to your sound card and run PSK-31. Includes CD software.

YS-130 £79.95 B

Ideal for medium sized VHF antenna systems, the YS-150 is a good quality Japanese manufactured product. It is supplied with control box with rotary direction setting, plus upper and lower in-line mast clamps.

REVEX • 15W DUMMY LOAD £19.95 A

- Range DC - 500MHz
- Power 15W/50W
- VSWR 1.15:1
- Connector PL259
- 50 Ohms impedance
- Size 34 x 72mm
- Weight 70g

MASPRO VHF/UHF YAGIS

These high quality Yagis are made in Japan and superbly engineered. Features folded dipole, balun transformer, waterproof box and SO-239. You won't find anything better on the market.

Take a look at our prices!

144-WH5	2m 5 el. 6.6dBd 0.93m	£26.95 B
144-WH8	2m 8 el. 8.6dBd 1.79m	£37.95 B
144-WH10	2m 10 el 9.7dBd 2.3m	£41.95 B
435-WH8	70cms 8 el. 8.6dBd 0.8m	£29.95 B
435-WH12	70cms 12 el. 12.8dBd 1.51m	£35.95 B
435-WH15	70cms 15 el. 14.2dBd 2.19m	£41.95 B

To compare with dBi figures, add 2.4dB

WATSON

QS-112 • SPEAKER MIC £16.95 A

Combined speaker-mic. with PTT switch. Models for Yaesu, Kenwood, Icom, Alinco and Motorola.

SPM-102 • SPEAKER MIC £9.95 A

Incredible value!

Has 4-way 3.5mm plug for VX-1, VX-5, FT-50 and IC-Q7E Handies

Limited stocks.

WM-308 • BASE MIC £59.95 B

The perfect answer for a high quality base microphone. Built-in pre-amp powered from ng or 2 x AA, electronic PTT and FM/SSB response switch. Includes lead with 8-pin plug. The plug needs to be wired for your radio. We can do this but phone for quote.

WCT-321 • LAPEL TALKER £19.95 A

The elegant way of personal communications.

Earpiece with combined lapel hanging mic and PTT. Models to suit most radios.

State: Kenwood, Yaesu or Icom when ordering

AVAIR VSWR • POWER METERS

Great value and great performance. There's one just right for you.

AV-200 1.8 - 200MHz 5/20/200/400W £49.95 B
AV-400 140 - 525MHz 5/20/200/400W £49.95 B
All fitted with SO-239, PEP/RMS readings, 3W for FSD approx.
Also available AV20 & AV40 compact meters

WATSON

ATX WALKABOUTS

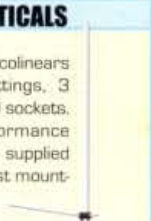
WALKABOUT PORTABLES

Multi & single telescopic whips. Covers 80m to 6m BNC. Ideal for FT-817 and similar QRP radios.

ATX Walkabout 80 - 6m	£69.95B
AT-80 Single band	£24.95B
AT-40 Single band	£24.95B
AT-20 Single band	£19.95A
AT-17 Single band	£19.95A
AT-15 Single band	£19.95A
AT-12 Single band	£19.95A
AT-10 Single band	£19.95A

BASE VHF/UHF VERTICALS

2m / 70cm fibre glass colinears with stainless steel fittings, 3 short radials and SO-239 sockets. These are high performance antennas, pre-tuned and supplied with all hardware for mast mounting.



Dual Band 2m/70cms

W-30	3/6dB 1.15m long	£39.95 C
W-50	4.5/7.2dB 1.8m long	£49.95 C
W-300	6.5/9dB 3.1m long	£59.95 C

Triple band 6m/2m/70cms

W-2000	0/6/9dB 2.5m long	£69.95 C

GREAT VALUE MOBILE WHIPS

W-285 2m 5/8th whip with PL-259 base £14.95 B

W-7900 2m/70cm 5 & 7.5dB length 1.58m £32.95 B

W-627 6m / 2m / 70cm 2 / 4.5 7.2dB length 1.6m £34.95 B

W-770HB 2m/70cm whip 3dB / 5.5dB length 1.1m £24.95 B

ALL WITH TILTOVER BASES

SGC
NO COMPROMISE COMMUNICATIONS

AVAILABLE FROM: WATERS & STANTON & ALL GOOD DEALERS

SGC NO COMPROMISE COMMUNICATIONS

SMARTUNER™–THE WORLD'S BEST SELLING COUPLERS

CLAIM YOUR £50 DISCOUNT IN MAY, JUNE OR JULY.

SG-230 SMARTUNER™

- 1.6 - 30MHz
- 3- 200 Watts
- 170 non-volatile memory addresses
- Tune time: 10ms
- Input: SO-239
- Output: High voltage terminal
- Supply: 12 - 14V 750mA approx. (optional 24V available)
- Fully weatherproof
- Size: 406 x 305 x 76mm

£359

SG-237 SMARTUNER™

- 1.8 - 60MHz
- 3- 100 Watts
- 170 non-volatile memory addresses
- Tune time: 10ms
- Input: SO-239
- Output: High Voltage terminal
- Supply: 12 - 14V 300mA approx.
- Fully weatherproof
- Size: 178 x 229 x 38mm

£369

SG-239 SMARTUNER™

- 1.8 - 30MHz
- 1.5 - 200W (PEP)
- 170 non-volatile memory addresses
- Instant tuning from memory (<10ms)
- Antenna: Min length 2.75m 3.5-30MHz
- Input impedance range 0.2- 5,000 Ohms
- Separate connections for antenna & ground
- DC supply 10-18.5V DC current 230mA
- Size: 190x 150 x 45mm
- Weight: 907g

£289

SG-231 SMARTUNER™

- Frequency 1MHz to 60MHz
- Power input 3 - 100W (PEP)
- 50W max CW
- VSWR: <1.4:1 (typical)
- 170 non-volatile memory addresses
- Antenna: Min length 2.4m 3.5-60MHz, Min length 7m 1-60MHz
- Input impedance range 45 - 55 Ohms
- Output: Ceramic terminal
- DC supply 13.6V DC 0.9A
- Fully weatherproof housing
- Size: 292 x 241 x 44mm
- Weight: 1.7kg

£399

SG-235 SMARTUNER™

- Frequency 1.8 to 30MHz
- Power input 3 - 500W (PEP) 200W max CW
- VSWR: <1.4:1 (typical)
- 170 non-volatile memory addresses
- Antenna: Min length 2.4m 3.5-30MHz, min length 7m 1.8-60MHz
- Input impedance range 45 - 55 Ohms
- Output: Ceramic terminal
- DC supply 13.8V DC 1.4A
- DC operating range: 10 to 17V
- Fully waterproof housing
- Size: 406 x 305 x 76mm
- Weight: 3.5kg

£1395

BUY ONE OF THESE TUNERS IN MAY, JUNE OR JULY & CLAIM AN INSTANT £50 DISCOUNT OFF THESE PRICES!

SGC NO COMPROMISE COMMUNICATIONS

YOU WON'T GET A BETTER OFFER THIS YEAR!

BUY AN SGC SG-2020 OR SG-2020ADSP HF 20 WATT TRANSCEIVER DURING MAY, JUNE OR JULY & RECEIVE AN SGC-239 MINI-COUPLER WORTH £239 ABSOLUTELY FREE.

SG-2020 £599

SG-2020 ADSP WITH DSP UNIT INSTALLED £799

- 1.8 - 29.7MHz Transceiver
- 0.5 - 20W SSB & CW
- Tx 3 Amps average
- Rx 300mA approx.
- VOGAD/RF clipping (SG2020)
- ADSP (SG2020ADSP)
- 100Hz display resolution
- 10Hz tuning steps
- Wide selectivity range
- Built-in IAMBIC keyer
- Size: 150 x 65 x 177mm
- Weight 1800g.

FREE SG-239 WORTH £239

FREE

PW

JULY 2002
(ON SALE JUNE 13)
VOL. 78 NO 7 ISSUE 1144
NEXT ISSUE (AUGUST)
ON SALE JULY 11

EDITORIAL OFFICES
Practical Wireless
Arrowsmith Court, Station Approach
Broadstone, Dorset BH18 8PW

☎ (01202) 659910
(Out-of-hours service by answering machine)
FAX: (01202) 659950

Editor
Rob Mannion G3XFD
Technical Projects Sub-Editor
NG ("Tex") Swann G1TEX/M3NGS
News & Production Editor
Donna Vincent G7TZB

ADVERTISEMENT DEPARTMENT
ADVERT SALES & PRODUCTION
(General Enquiries to Broadstone Office)
Eileen Saunders
Art: Steve Hunt
Layouts: Bob Kemp
Typesetting/Production: Peter Eldrett

☎ (01202) 659920
(9.30am - 5.30pm)
FAX: (01202) 659950

ADVERTISING MANAGER
Roger Hall G4TNT
PO Box 948, London SW6 2DS

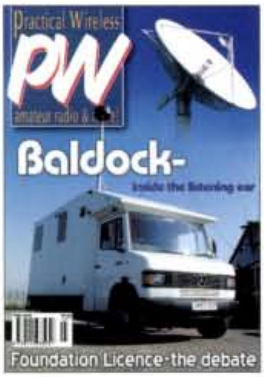
☎ 020-7731 6222
FAX: 020-7384 1031
Mobile: (07885) 851385

ACCOUNTS
FINANCE/OFFICE MANAGER:
Alan Burgess
Tel: (01202) 659940
FAX: (01202) 659950

BOOKS & SUBSCRIPTIONS
CREDIT CARD ORDERS
☎ (01202) 659930
(Out-of-hours service by answering machine)
FAX: (01202) 659950

SUBSCRIPTION ADMIN
Kathy Moore
Tel: (01590) 641148
E-Mail: subs@pwpublishing.ltd.uk

E-MAIL
PW's Internet address is:
pwpublishing.ltd.uk
You can send mail to anyone at *PW*, just insert their name at the beginning of the address,
e.g. rob@pwpublishing.ltd.uk



Cover Subject
This month's slightly unusual front cover features two aspects of the work carried out at the Radiocommunications Agency's Baldock Monitoring station in Hertfordshire. The steerable microwave parabolic antenna is used to monitor satellites broadcasting services, and the mobile laboratory vehicle, posed at the station, is used in field tests assisting the RA's Engineers in monitoring and regulating radio based telecommunications services anywhere in the country.

Photographs: **Courtesy of the Radiocommunications Agency**
Design by: **Bob Kemp**

July features

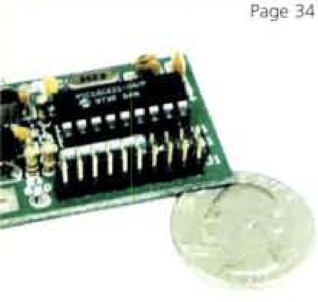

Page 17


Page 24



Page 32


Page 34


Page 46

July regulars

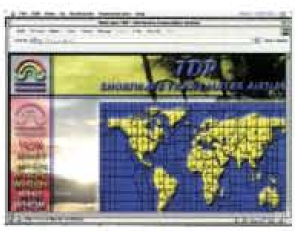

Page 48

Page 52


Page 54


Page 56


Page 58


Page 61

author info

Our Radio Scene reporters' contact details in one easy reference point.

VHF DXer
David Butler G4ASR
Yew Tree Cottage
Lower Maescoed
Herefordshire
HR2 0HP
Tel: (01873) 860679
E-mail: g4asr@btinternet.com

HF Highlights
Carl Mason GW0VSW
12 Llwyn-y-Bryn
Crymlyn Parc
Skewen
West Glamorgan
SA10 6DX
Tel: (01792) 817321
E-mail: carl@gw0vsw.freeserve.co.uk

Keyboard Comms
Roger Cooke G3LDI
The Old Nursey
The Drift
Swardeston
Norwich,
Norfolk NR14 8LQ
Tel: (01508) 570278
E-mail: rcooke@g3ldi.freeserve.co.uk
Packet: G3LDI@GB7LDI

Tune-in
Tom Walters
PO Box 4440
Walton
Essex
CO14 8BX
E-mail: tom.walters@aib.org.uk

In Vision
Graham Hankins G8EMX
17 Cottesbrook Road
Acocks Green
Birmingham
B27 6LE
E-mail:graham@ghank.demon.co.uk

DX Destination
Ed Taylor G3SQX
C/o PW Editorial Offices
Arrowsmith Court
Station Approach
Broadstone
Dorset
BH18 8PW
E-mail: g3sqx@email.com

Down Under
Chris Edmondson VK3CE
Box 123
Eagle Heights
Queensland 4271
Australia
E-mail:editor@radiomag.com

Published on the second Thursday of each month by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Tel: (01202) 659910. Printed in England by Warners Midlands PLC, Lincolnshire. Distributed by Seymour, 86 Newman Street, London, W1P 3LD, Tel: 0207-396 8000, Fax: 0207-306 8002, Web: http://www.seymour.co.uk. Sole Agents for Australia and New Zealand - Gordon and Gotch (Asia) Ltd.; South Africa - Central News Agency. Subscriptions INLAND £25, EUROPE £30, REST OF WORLD £32 (Airsaver), REST OF WORLD £37 (Airmail), payable to PRACTICAL WIRELESS, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Tel: (01202) 659930. PRACTICAL WIRELESS is sold subject to the following conditions, namely that it shall not, without written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover, and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever. *Practical Wireless* is Published monthly for $50 per year by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Royal Mail International, c/o Yellowstone International, 87 Burlews Court, Hackensack, NJ 07601. UK Second Class Postage paid at South Hackensack. Send USA address changes to Royal Mail International, c/oYellowstone International, 2375 Pratt Boulevard, Elk Grove Village, IL 60007-5937. The USPS (United States Postal Service) number for Practical Wireless is: 007075.

ANOTHER PACKED ISSUE

rob mannion's keylines

Welcome to 'Keylines'! Each month Rob introduces topics of interest and comments on current news.

I'm very proud of my Amateur Radio hobby and have enjoyed it, and the many friends I've met and made over nearly five decades. Indeed, you could also correctly say (as my main hobby is also my job) that Amateur Radio is my life too. However, despite my love of Amateur Radio and the vast majority of people within the hobby...I'm becoming deeply disturbed by the actions of a minority in the way they treat the new M3 operators and Novice operators.

The letters, E-mails and other comments that have come my way are beginning to make me despair. Please everyone...just sit back and think! Surely - even if you (the reader) took the full RAE and Morse test - you can accept that the newcomers are not illegal operators, they're qualified to the standards set by the Government's Agency, are licensed and are dead keen. **We must make them welcome, help them along and they in turn will mature into the hobby**.

In fact, the problems have got so bad I'm reminded of my younger brother **Jonathan** who is now an extremely skilled Marine Pipe Fitter - nowadays working mainly on Petroleum Refinery installations. If he doesn't do his work correctly the results could be catastrophic! However, when he started his Indentured Apprentice at (the then) Thornycroft's shipbuilders in Woolston, Southampton in Hampshire he had a very rough start, being badly treated by his elders.

Jonathan was placed with a very experienced, highly qualified Pipe Fitter, with whom he would spend the rest of his Apprenticeship. However, rather than greeting my brother with "We'll work well together Lad...and I'll help you in anyway I can" the old man said "If you think I'm ever going to explain anything...you've got another thing coming! Watch what I do, do the same and don't ask questions. That's the way I had to learn and that's the way you're going to learn"!

What an attitude! But despite the man's dreadful outlook on life (and perhaps because of it!) Jonathan managed very well indeed. But it left its mark...and Jon' has never forgotten the sour approach to life. We don't want that to happen in our hobby do we?

Surely - after reading his comments on the letters pages - you couldn't refuse to work young **Gary Hurst 2E0IDX** on the air? It seems as though some of you are doing this...and my reaction is to tell you (It hurt me writing the next words) **I am ashamed of such poor behaviour**. Perhaps now the offenders will think again about the situation?

And to help you think again - Gary's photograph is shown on this page. **By putting a face to the callsign...surely even the most hardened, dyed-in-the-wool reactionary might relent?**

I'm proud of newcomers like Gary (although not all newcomers are young of course) and I say 'Good luck' and 'Bon Voyage' on their journey through our hobby. Let's hope I can again be proud when those that have done so...realise they've made a mistake against the hobby. **So, come on everybody...let's pull together - it's a wonderful hobby...whatever your callsign!**

Difficulties Easing

Other problems for the M3 operators are lessening, especially those to do with our friends in the Republic of Ireland. The difficulties originally surfaced due to a combination of the official approach of the Irish ODTR (The Republic of Ireland's official body responsible for Amateur Radio licensing) and the unfortunate **very heavy emphasis** of their approach, during the **Irish Radio Transmitters' Society** (IRTS) Annual General Meeting in County Mayo during early March (I was present at the meeting) regarding the non CEPT M3 callsigns and their (illegal) use in Ireland as EI/M3, etc. (This arose because M3 licensed operators cannot legally operate outside the UK under the usual recognised CEPT regulations, as is possible for the A and B Licences.)

Unfortunately, due to the heavy emphasis of the ODTR's original announcement...the confusion spread. A number of UK Amateurs with Class B Licence - on holiday in Ireland - then found that Irish (EI) stations were reluctant to work them. **This wasn't due to unfriendliness**, but was directly due to the EI operators fearing the loss of their own Licence, **because of the heavy underlining of the original ODTR announcement**.

Fortunately, however, the situation has now been resolved by announcements on the IRTS news service and on their Internet newscast. So, it's good to know that the normal - **absolutely superb** - relations between Radio Amateurs in Ireland and the UK have been maintained despite the unfortunate, and in my opinion, totally unnecessary misunderstandings.

The *PW* approach is to fully support the hobby **everywhere and in any way it can** and to this end I am a member of the IRTS, and of course also a member of the Radio Society of Great Britain. My activities as an employed (not elected...as are our representatives in the national societies) Amateur Radio hobby magazine Editor are aimed at helping readers to enjoy the hobby. As such, *PW* cannot take the place of a National society in any country where it's read (**and indeed wouldn't try!**). Instead the Editorial team try to make *PW* the one 'extra special ingredient' you can add to bring out the full flavour...wherever our hobby is enjoyed. The other 'vital ingredient'...**is yourself**!

Rob G3XFD

practical wireless services

Just some of the services *Practical Wireless* offers to readers...

Subscriptions

Subscriptions are available at £30 per annum to UK addresses, £38 in Europe and £42 (Airsaver), £49 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both Practical Wireless and Short Wave Magazine are available at £60 (UK) £73 (Europe) and £81 (rest of world), £85 (airmail).

Components For *PW* Projects

In general all components used in constructing *PW* projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article. The printed circuit boards for *PW* projects are available from the *PW* PCB Service, **Kanga Products, Sandford Works, Cobden Street, Long Eaton, Nottingham NG10 1BL. Tel: 0115 - 967 0918. Fax: 0870 - 056 8608.**

Photocopies & Back Issues

We have a selection of back issues, covering the past three years of *PW*. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for *PW* are £2.50 each and photocopies are £2.50 per article.

Binders are also available (each binder takes one volume) for £6.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Prices include VAT where appropriate.

A complete review listing for *PW/SWM* is also available from the Editorial Offices for £1 inc P&P.

Placing An Order

Orders for back numbers, binders and items from our Book Store should be sent to: **PW Publishing Ltd., Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling. Credit card orders (Access, Mastercard, Eurocard, AMEX or Visa) are also welcome by telephone to Broadstone **(01202) 659930**. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Broadstone **(01202) 659950**.

The E-mail address is **bookstore@pwpublishing.ltd.uk**

Technical Help

We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. Any technical queries by E-mail are very unlikely to receive immediate attention either. So, if you require help with problems relating to topics covered by *PW*, then please write to the Editorial Offices, we will do our best to help and reply by mail.

Make your own 'waves' by writing into *PW* with your comments, ideas, opinions and general 'feedback'.

The Star Letter will receive a voucher worth £10 to spend on items from our Book or other services offered by *Practical Wireless*.

All other letters will receive a £5 voucher.

Foundation Support

● **Dear Sir**

Making the Amateur Radio Licence easier to get is not changing the fact that it's a privilege to hold. It's just making it more accessible for those who struggle with the trickier aspects of the examination or Morse Code.

Lowering the 12w.p.m. requirement to 5w.p.m. was a step in the right direction, and the Foundation scheme is bridging the gap between the newcomer and the RAE/NRAE. As a holder of the Intermediate A Licence for a year, and the B for nearly three, I was lucky to get help at the start and this support has helped me progress forward.

I found the Morse Code very hard at first, and tried many ways to learn it. In the end 'On air' classes were - in my view - the best. With **Roy G4UNL** sending, with myself and the rest of the group listening and learning - we soon grasped it. Without his help I wouldn't have been licensed yet, because I would not have known of his work and no doubt still be in the early stages.

The Foundation Licence has to be taken more as a 'stepping stone' (as the title suggests), than the 'Be all, and end all', especially as most of the M3s I have spoken to are planning to progress.

I am on a team, based at a Scout Camp, training future M3s. Just to see the people walking away with a smile on their faces is enough for me to think "It's bringing the numbers back to the bands". Long may it continue!

Gary Hurst 2E0IDX (Aged 15)
Cheshunt
Hertfordshire

Editor's comments: Please see Keylines.

Thornton Cleveleys ARS Help

● **Dear Sir**

Thank you for the information on the Pro-Am h.f. whips (G3XFD's review on the subject) arrived on Friday as promised. They seem to be just what I am looking for, thanks very much. You may also be interested to know that I attended the Foundation Course class run by **Thornton Cleveleys Amateur Radio Society** on a recent weekend and passed the exam on the Sunday afternoon.

The course was extremely enjoyable, very informative and very well organised and a credit to the tutors involved. I was so impressed that I went to the club meeting on Monday night and became a member myself. I am now awaiting my Licence and the callsign **M3NOR** (***Editor's note - see below***), it can't come quick enough and I hope to speak to you on the bands sometime!

The course was run over the weekend of the 20/21st April and I joined as a member on Monday the 22nd April!

For their splendid efforts my thanks go to **Philip Rigby G8LMF** (Lead Tutor), **Charles Webb G4FWM** (Tutor), **Kevin Wall G0LRK** (Morse assessor) and **John Webb G8RDP** (First Invigilator). I must also say "Thank you" to the **1st Fleetwood Scouts** for providing the training facility.

Adrian Norcross
Chorley
Lancashire

Editor's comment: Take a bow Thornton Cleveley ARS! Adrian has since E-mailed me to say that his callsign is actually M3ANR, but he's equally happy with it! Enjoy the hobby Adrian!

Idiotic Behaviour

● **Dear Sir**

On 14 April, within hours of the 90th anniversary of the sinking of the RMS *Titanic*, some mindless idiot was sending "SOS SOS hi hi" on the frequency used by **GB90MGY**. This Special Event Station was set up to recognise the bravery of the Marconi Company's Wireless Operator Jack Phillips and his role in saving over 700 lives on that tragic night.

Even if Morse code is no longer officially used in the maritime service it is important that the letters SOS (and for that matter the word MAYDAY) should **NEVER** be sent on the airwaves **except in cases of distress**. May I request that all *PW* readers ensure that this rule is made perfectly clear to all new licensees or potential licensees pointing out that such stupidity will lead to their licences being revoked. Additionally, it should be remembered that it is a criminal offence to send such false calls for assistance.

As an ex maritime Radio Officer myself, I can safely say that we never sent SOS even when at wireless college. Thank goodness I was never required to send it nor did I ever receive it. Colleagues on the large deep-sea tugs say that it would send a shiver down their spine every time they heard it.

David Barlow JP G3PLE
Radio Officers Association.
Helston
Cornwall

Editor's comment: The 7MHz band has attracted several 'peculiar' people for many years, especially on Special Event Station frequencies. The 'microphone 'scratcher' and 'carrier' swisher has been rendered mostly ineffectual for those of us with a Digital Signal Processing (DSP) 'Notch Filter'. However, if several operators can get a bearing on such nuisance transmissions by co-operating with other Amateurs- please pass the results on to the Radiocommunications Agency and the Amateur Radio Observation Service (AROS). Never acknowledge you've heard the nuisance station - they thrive on recognition. Ignore their efforts and they don't know if they're even being heard!

Foundation Licence Home-Brewing

● **Dear Sir**

I have held **GM6HGW** for over 20 years, have built a number of transmitter/receiver projects for h.f., v.h.f. and u.h.f. and repaired valved h.f. transmitters for holders of A class licences. At present I'm permitted to design and build and operate a v.h.f. 400W transmitter. In several areas of the UK, the emergency services use the allocation 146 - 148MHz as the input to their repeater system. That vital emergency communications could be disrupted if my transmitter wasn't built, tested and maintained correctly...possibly more so than if the same happened at h.f..

However (here's the anomaly) if as GM6HGW I built an h.f. transmitter...**I'm not allowed to operate it as MM3ACL**. An 'A' class licensee would have to use it for me. While they would be responsible for any interference caused, they might not be so technically competent as I consider myself to be. However, they have an authority to use a home-made transmitter with an output of 400W. The difference? **They've sat an examination on the Morse code and I have sat an assessment**. While I genuinely welcome the recent changes made by the RA in the licence structure, I don't believe the technical competence and ability of 'B' class licensees who have taken out Foundation Licence callsigns been given sufficient credence.

For many years I have been quite happy as GM6HGW, just as I'm very happy as MM3ACL. But I'd be even happier still if (as MM3ACL) I was permitted to build some h.f. equipment.

Colin Topping
GM6HGW/MM3ACL
Newport on Tay
Scotland

TW Communicators & Modules

● **Dear Sir**

The mention of the Mullard modules in the TW Electronics equipment (**Ben Nock G4BXD's** article The TW Communicators, March 2002) brings back memories.

I still have a couple of different i.f. modules and an a.f. module here. They were used in some British-made domestic portable radio receivers.

However, it seems that, as soon as the accountants who ran the British radio manufacturing industry decided that they could more cheaply, and hence more profitably, have their products sourced from the far east, Mullard's market for modules such as these dried up, and Mullard very quickly threw in the towel.

Do you remember the Mullard radio frequency (r.f.) and intermediate frequency (i.f.) integrated circuits, the TAD100 and TAD110, and the ceramic i.f. filters, as used in projects by Amateurs such as **David Tong** (of Datong fame) and **John Heys G3TDZ** in the early 1970s? It seems that they disappeared immediately competing products from the likes of Toko and Murata appeared on the scene.

I wonder what on earth went wrong at Mullards? Yes, I know they were swallowed up by Philips many years ago, but how did they allow that to happen? Alas for British industry, the Mullards, Plesseys, and Ferrantis of this world! Have a nice day!

Terry Lambert G8EZL
Cullercoates
North Shields

Editor's comment: Remember the 'tin boxes' (Mullard Modules)? Yes I do Terry! The idea was that the module had to be replaced - but G3XFD always tried to repair them (often unsuccessfully). Incidentally readers, because he has enough material to write a full book on the subject, Tom Withers G3HGE's TW Story article is taking longer to prepare than expected. I apologise for the delay in publishing...but it'll be worth waiting for I'm sure!

Iberian Peninsula Welcomes You!

● **Dear Sir**

Hello to all fellow Amateur Radio operators! I'm an ex-patriot living in the south of Spain close to the Portuguese Algarve. Some years ago I obtained a B licence here which allows me to operate on the 144 and 430MHz bands. I hope soon to up-grade to a C Licence pending passing the Morse test. This I have no objection to taking, as although it's not seen as being useful among many Amateurs these days, I don't think it does any harm to be able to use Morse. Many of my fellow Amateurs in our local radio club use Morse every day, and the feeling is **NOT** one where "Whoever wants a C or an A class licence MUST take the Morse test". They happily accept that if Morse disappears from the requirements of being able to get a Licence then that's just the way the Administration works (although they do think Amateur Radio will be poorer because of it).

My main reason for writing is that I would just like to encourage all UK amateurs to take their hand-held transceivers with them if they travel to Spain or Portugal and to use them on the local repeaters. Southern Portugal has two metre repeaters on 145.650, and 145.725MHz, and a 70cm repeater on 434.725MHz with an access tone frequency of 74.4Hz on all three.

Huelva, where I am located, locator IM67MG, has a two metre repeater on 145.650MHz, no tone required. There are also Packet and cluster frequencies around 144.800 - 144.825MHz. It was always possible to make contact with UK callsigns down here during the summer months but in the last couple of years there has been a fall off in v.h.f. and u.h.f. activity. I know this may be due in part to the fact that h.f. operation is so much easier these days with the new compact equipment and antennas, but please don't stop using v.h.f. and u.h.f. just because of this.

Members of our local club are also testing equipment to put ATV into operation, we have a website, **www.atv-huelva.com** although registration is required to be able to access it. So, when you think to take a trip down this way, pack your hand-held in your bags and use it. Many Amateurs here speak English, be it perhaps only 'Ham-speak', but don't let that stop you!

73 and hope to catch you on the air - on the Iberian Peninsula - some time.

John Flynn EB7EJJ
Calle Palos 21
21003 Huelva
Spain
E-mail:
Eb7ejj@hotmail.com

Keep your letters coming to fill *PW*'s postbag

Letters Received Via E-mail

A great deal of correspondence intended for 'letters' now arrives via E-mail, and although there's no problem in general, many correspondents are forgetting to provide their postal address. I have to remind readers that although we will not publish a full postal address (unless we are asked to do so), we require it if the letter is to be considered. So, please include your full postal address and callsign with your E-Mail. All letters intended for publication must be clearly marked 'For Publication'.

Editor

amateur radio rallies

Radio rallies are held throughout the UK. They're hard work to organise so visit one soon and support your clubs and organisations.

June 16

The Leeds & DARS Outdoor Rally
Contact: J.A. Mortimer M0JAM
Tel: (01943) 874650

The Leeds & District Amateur Radio Society are holding their twice yearly traditional outdoor rally and car boot sale at the Yarnbury Rugby Club, Brownberrie Lane, Horsforth, Leeds. Why not go along?

June 16

Newbury & District ARS Boot Sale
Contact: Mark Slade M0CUK
Tel: (01635) 36444 (day)
Website: http://www.nadars.org.uk

The 16th Annual Newbury & District Amateur Radio Society Boot Sale is taking place at Cold Ash, near Newbury. For more information contact the organisers.

June 16

The East Suffolk Wireless Revival
Contact: Iain G0OZS/John G3XDY
Tel: (01206) 396419/(01473) 717830.

The East Suffolk Wireless Revival (the Ipswich Rally) is being held at Ransomes Sports & Social Club, Sidegate Avenue, Ipswich. The rally opens at 0930 for visitors and 0800 for traders. There will be a car boot sale, Bring & Buy, trade stands, Morse assessments, vintage h.f. station, car parking and refreshments (including breakfasts from 0800). Talk-in will be on 144MHz, channel S22. **Please note the venue has changed from last year.**

June 29

The Reddish Rally
Contact: John G4ILA
Tel: 0161-477 6702.

The Reddish Rally will take place at St. Mary's Parish Hall, South Reddish, Stockport. The hall is situated in St. Mary's Drive, junction of Broadstone Hall Road South/Reddish Road. Doors open at 1100 and there will be refreshments and a talk-in on S22. Admission is £1.

July 7

The York Radio Club Rally
E-mail: yorkrally@btopenworld.com
Website: www.john.g4fuo@btinternet.co.uk/rally.htm

The York Radio Club are holding their rally at the new stand in York Racecourse at 1030. Plenty of free parking.

July 13

Cornish Radio & Computer Rally
Contact: Ken G0FIC/John G4LJY
E-mail: ken@jtarry.freeserve.co.uk/g4ljy@hotmail.com

The Cornish Radio Amateur Club are holding their Radio & Computer Rally at Penair School, Truro. There will be trade stands, Bring & Buy, Morse tests, free car park, catering and a talk-in. Doors open from 1030. More information from the Rally Co-ordinators.

If you're travelling a long distance to a rally, it could be worth 'phoning the contact number to check all is well, before setting off.

Did You Know?

RA at Whyteleafe

For many years the work of the Radioco to Radio Amateurs, but things are changing and to give you an insight here's a taster on what goes on at Whyteleafe in Surrey.

The Radio Technology and Compatibility Group arm of the RA is situated at Whyteleafe in Surrey on the site of RAF Kenley. Kenley was an active air base from 1917-1978 playing an important role in the RAF's Battle of Britain efforts. Today the grounds are home to the RTCG but gliders from the 615 Gliding School are often seen over the old airfield.

The work carried out by RTCG is diverse and varied, complementing the work done by other RA organisations such as Baldock. The site has a range of measurement and test facilities allowing the work force to tackle a wide range of investigations into radio systems, technology and spectrum sharing as well as compatibility studies and issues between emerging and existing radio systems.

The measurement facilities at RTCG cover from 9kHz to 140GHz allowing work from basic type approval through to more complex investigations such as new radio technologies to be carried out. In fact they test everything from battery controlled toy cars to cordless drills so that standards can be written.

So, its the RTCG who work on behalf of Radio Amateurs to ensure that next door's d.i.y. enthusiast isn't putting out spurious emissions right on top of your transmissions! They also organise training for the Radio Investigation Service, training them in procedures for tracing illegal and pirate radio operators, keeping the radio spectrum clean and tidy!

There's even have a small museum on site of older radio equipment and memorabilia, most of which has been donated by staff as well as a fully operational Amateur Radio station. The station, **M0RCA**, has been activated for several Special Events including, the 60th Anniversary of the Battle of Britain (August 2000) when the special call **GB4KEN** was aired and the Marconi Centenary Celebrations with **GB100WT**.

The Amateur Radio equipment was initially bought to carry out testing but as there are several licensed Amateurs on staff including G3ZIY, G4HUK, G7GLK, G8BGR, G8SFR, G0AOA and G3ZPB, it was decided to set-up a permanent radio room. The equipment includes an Icom IC-775DSP, and a linear amp Acom 2000A runing into a Log Periodic for 21, 24 & 28MHz or into a Vertical for working the 3.5 to 28MHz bands. For v.h.f. work a Yaesu FT-736R running into a cross-dipole is used for 144 & 430MHz work and a log periodic for other v.h.f./u.h.f.bands.

So, as you can see the RA and their various departments really do work for the good of the radio spectrum and all its users and although much of their work is behind the scenes they do a great job!

The Radiocommunications Agency can be contacted by calling **0207-211 0211** or why not check out their website at **www.radio.gov.uk** where you will find links to the RTCG group?

If this insight has whetted your appetite then you may like to pick-up a copy of *Radio Active* July where you will find a full report on the work of the RTCG. It's on sale 21 July priced £2.50. If you have difficulty obtaining a copy please send £2.50 (coins or postal order) to:

Donna Vincent,
Dept RA/W07, PW Publishing Ltd.
Arrowsmith Court, Station Approach,
Broadstone, Dorset BH18 8PW

Update

QRP Contest

The gremlins have been at work again and thanks to them a couple of errors crept into the rules article for the PW 144MHz QRP Contest published in last month's PW. So to set the record straight please take note of the following.

The date of the contest is, of course, **Sunday 16 June 2002** running from 0900-1600UTC. Entries must be postmarked **no later that 1 July 2002**, or sent by E-mail by the same date. Photos of your station are welcome and can be sent later, up to **5 August 2002**. Don't forget to also send the corner-flash coupon that was printed with rules, if you would like to receive the special *PW* 70th Anniversary Certificate available to all entrants.

See the QRP Contest website**www.contest.org.uk** for more information.

On Air

Special Station - GB5NF

Do you live in or around the city of Bath? If so you may like to join in with the Neston Fete Special Event Station.

The Wessex Repeater Group are taking to the air on Saturday 13 July when they activate **GB5NF** at the Neston Fete. The Fete is a traditional village event which is taking place at Neston about 10 miles north-east of the city of Bath.

The station will be on air from midday, local time and will be operating on h.f., v.h.f. and u.h.f. bands using a variety of modes including PSK31. So, why not listen out for them and try and work them to add to your list of contacts. For more details on the event check out the GB5NF website at

http://www.g4sknradio.freeserve.co.uk/gb5nf.htm

Stateside News

New HF Allocation

American Amateurs receive support from the Federal Communications Commission on Secondary h.f. band allocation.

The Federal Communications Commission (FCC) has proposed to go along with the American Radio Relay League's (ARRL) request for a new, US-only, secondary h.f. allocation between 5.25 and 5.4MHz. The FCC is also ready to permit operation on a 136kHz 'sliver band' in the LF region.

The FCC are reported as saying that the new 5MHz band would help Amateurs "better match their choice of frequency to existing propagation conditions". The band, if approved, would be the first new Amateur h.f. allocation since the World Administrative Radio Conference in 1979 gave them 24, 18 and 10MHz - the so-called WARC bands. Assuming the 5MHz band is eventually authorised, it could still be a few years before it actually becomes available in the USA.

An Apology

Aberystwyth Radio Rally

Ray Ricketts GW7AGG, Secretary of the Aberstwyth & District Radio Society would like to apologise to PW readers who didn't get to hear about the cancellation of the Aberystwyth Radio Rally in time.

Unfortunately the recent Aberstwyth Radio Rally had to be cancelled and **Ray GW7AGG** would like to apologise and thank all those who turned up for the event only to be turned away at the Penparcau School gates for being so understanding. Some of them had travelled from as far afield as Gloucester, Port Talbot, Rhyl and Welshpool.

However, Ray was slightly upset to hear about the 'gentleman' who left a message on the advertised phone number, stating that he couldn't find the ****** (expletives deleted) rally and then proceeded to unleash a diatribe of angry cursing. "I hope" (says Ray) you'll all agree that this was completely uncalled for, and no, he didn't leave his name!

On a lighter note Ray and other Aberystwyth club members hope that a rally will be organised early next year and would like to hear from anyone who can offer advice on how to encourage more vendors to sell and network. So, if you have any ideas, such as how to develop themes, venue, situation, timing and publicity Ray would be delighted to receive your suggestions and offers to organise a discussion group on the subject and collate the findings. Please E-mail or write (but not phone!) and he'll publish the results.

Ray Ricketts GW7AGG
Secretary of Aberystwyth & District ARS,
2 Brynystwyth, Penparcau,
Aberystwyth, Ceredigion
SY23 1SS. E-mail: mwmg01@aber.ac.uk

On the Air

International Marconi Day

In celebration of International Marconi Day the Chelmsford Amateur Radio Society aired two h.f. stations under the club callsign GX0MWT.

On Saturday 27 April members of the Chelmsford Amateur Radio Society (CARS) manned and operated two h.f. stations from the Sandford Mill Science and Industrial Museum using the call **GXOMWT**. One of the stations was located in the original wooden hut used by the broadcast station **2MT** back in the 1920s.

A doublet antenna running over the river was used on the 3.5 and 7MHz bands. For the higher bands a 3-element tri-band beam was mounted on a flat roof with the aid of a Black and Decker Workmate to supply the support for the short stub mast. A kite antenna was also used but bad weather conditions meant that it could not be flown for very long.

John M0CQK on air with GXOMWT for International Marconi Day (photo courtesy of Trevor M5AKA).

The stations were on air from 0000GMT until 2020GMT operated by a team of co-ordinated by **Brian G3CVI**. Special mention must be given to **John M0CQK** who operated the 14MHz station continuously during a marathon 10 hour stint from 0200 until 1200GMT!

Around 700 contacts were made all over the world. The doublet antenna over the river worked especially well on 3.5MHz.

The Sandford Mill Science and Industrial museum was open to the public from 1000-1700 and **Geoff G3EDM** organised a team of hosts to explain to visitors what was happening at the stations and what Amateur Radio is all about. Overall about 293 people visited the stations during the day and the club attracted several new candidates for their Foundation course.

The original wooden hut used by the broadcast station 2MT back in the 1920s (photo courtesy of Trevor M5AKA).

Various events took place during the day and one in particular that proved popular with the younger visitors was the mast building. This allowed visitors to see how high a mast they could build and discover why masts are built up from triangles and not rectangles.

In a portable building outside the museum **Chris G0IPU** ran Morse assessment sessions. During the day 15 Full and Intermediate B holders took the assessment.

All in all it was a very successful day. If you'd like to know more about the Chelmsford Amateur Radio Society and their activities please contact **David Bradley M0BQC** the club Secretary.

Chelmsford Amateur Radio Society,
David Bradley M0BQC
Tel: (01245) 602838
E-mail: cars@g0mwt.org.uk
Website: http://www.g0mwt.org.uk/

amateur radio clubs

Keep up-to-date with your local club's activities and meet new friends by joining in!

ESSEX

Chelmsford ARS
Contact: David Bradley M0BQC
Tel: (01245) 602838
E-mail: cars@g0mwt.org.uk
Website: http://www.g0mwt.org.uk/
The Chelmsford ARS meet on the first Tuesday of each month at 1930hrs in the Marconi Social Club, Beehive Lane, Great Baddow, Chelmsford. Meetings for the forthcoming weeks include:
July 2: 'How to set up an h.f. station' a talk by club members; **Aug 6**: Table top sale and **Sep 3**: A Talk on the Amateur Radio Observation Service.

HAMPSHIRE

Three Counties ARC
Contact: Damian Kamm M0BKV
Tel: (01428) 724456
E-mail: KammDP@btinternet.com
The Three Counties Amateur Radio Club meets on the 2nd & 4th Thursday of the month at Bramshott Parish Inst & Club, Headley Road, Liphook, Hants. The club programme offer plenty of variety and events for members and non members to join in with. The Club's Summer Eve Fox Hunt takes place on **June 13**: starting at 2000hrs using Map SU83/93 with a Broadcast from the Fox every 10 minutes for 60 seconds; **July 25**: On the air night QRZ at the pub with no name!(White Hart) Froxfield nr. Petersfield, h.f. from the club Tri-band 3-ele Cushcraft Yagi at 40ft. Non club members are very welcome at all events.

LONDON

Wimbledon & District ARS
Contact: Jim G4WYJ
Tel: (01737) 356745
The Wimbledon Society meet on the 2nd and last Friday of the month at 1930hrs at St. Andrews Church Hall, Herbert Road, Wimbeldon, London SW19. Forthcoming meetings include: **June 14**: Desert Island Radio by **Reg M1EEK**, **28th**: Members Evening; 'Summer Camp Briefing' and **July 12**: Picatune - Talk & demo by **Paul Berkeley M0CJX**.

WEST MIDLANDS

MAXPAX
Contact: Miles Hall
Tel: (01952) 585447
E-Mail: milesclifford@aol.com
Maxpak monthly meetings held at the Perton centre, near Wolverhampton at 2000hrs. The next meeting takes place on July 1st and will be a AGW/WINPAK software installation and set-up demonstration by **G0CNG and G4GSB**. So why not go along to find out more?

WILTSHIRE

Trowbridge & District ARC
Contact: Ian Carter
Tel: (01225) 864698
Website: www.gertdarc.fsnet.co.uk
The club meets at the Southwick Village Hall, Southwick, unless stated otherwise. Main meetings commence at 2000hrs unless otherwise stated. All main meetings may be subject to change depending on availability of guest speaker, please watch for updates via the web site, GB2RS or on the club 144MHz Net on Monday evenings between 1930 & 2000hrs. Visitors are always welcome to all meetings. Forthcoming meetings include: **July 3:** 144MHz Direction Finding Event starting 1930 from club venue; **July 17:** Natter night and **Aug 7**: RAYNET & Emergency Planning Mapping with 2E1EYI & G1HFY.

Radio Basics

This month Rob Mannion G3XFD presents an unusual edition of the column in the form of a 'Construction Experience' where he shares the experience he enjoyed when building the 'Wurzel' regenerative receiver kit.

I'm always on the look-out for ideas to suggest and describe to the keen readers who join me each month in Radio Basics (RB). And in fact, as I've told many of you during *PW* Club Visits...this column is the one which causes me with the hardest work and most pleasure as I try to keep the ideas flowing. It's a real challenge but an enjoyable one!

It's interesting to hear from RB readers - especially as the correspondence I receive reflects the wide range of ages and experience of those who enjoy the column. In fact, letters and E-mails clearly demonstrate that RB readers range from 15 to over 80 years of age and include outright beginners to those re-discovering the joys of 'building and learning, experience.

Occasionally, I discover something ideal for this column and this month I'm delighted to share "A construction experience" with you as I describe a truly delightful weekend project - the Walford Electronics 'Wurzel' receiver. It's great fun and in my opinion an absolutely ideal project for RB readers to try. Additionally, being a kit, for those of you who are just starting out (with a limited stock of components), everything is provided, except the enthusiasm which you supply yourself of course!

● This month Rob Mannion G3XFD shares a 'Construction Experience' describing a simple receiver which he thinks is ideal for Radio Basics readers.

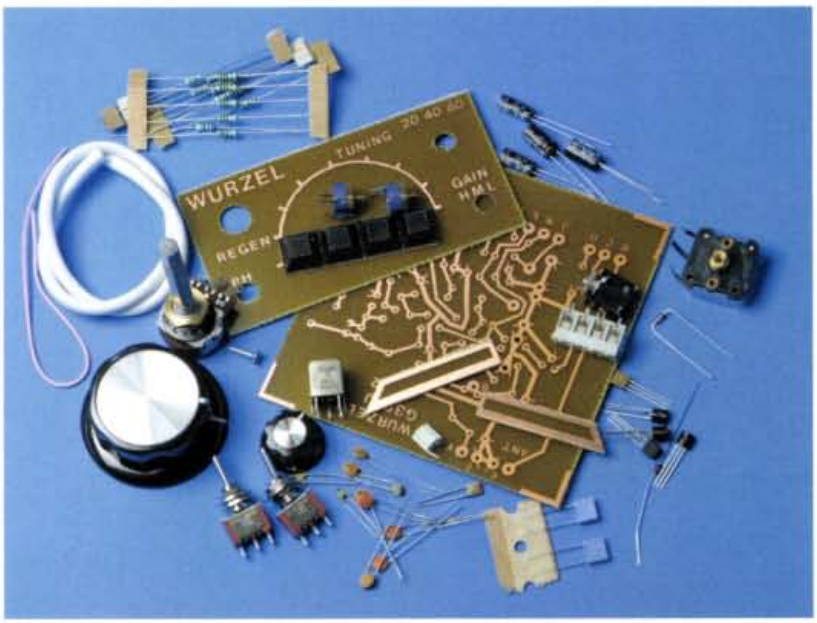
Wireless Wurzel

Tim Walford G3PCJ, based in Somerset, has a reputation for excellent 'real radio' kits such as the Wurzel and for choosing evocative names reflecting his beautiful part of the ancient Kingdom of Wessex. Indeed, the names he chooses adds to the fun and I've pondered on a imagined next offering (The Walford 'Somerton'...which if it arrives surely would be a major communications rig...remembering the famous British Telecom International short wave station of the same name!).

Basically speaking the Wurzel kit, **Fig. 1**, when built provides a 9 to 15V operated, 3.5, 7 and 14MHz coverage, tuned radio frequency receiver (t.r.f.) with a regenerative detector. The 'tuned radio frequency' bit is important because it adds radio frequency amplification and some selectivity. A t.r.f. design can also include regeneration and the Wurzel has this extremely effective technique included (see block diagram in **Fig. 2**). Incidentally, as the kit is a proprietary design of Tim's, I've not published the actual circuit.

If you've ever tried any of my projects - using MPF102 field effect transistors (f.e.t.s) you'll have come across the regeneration technique before. The difference is that in the Wurzel the regeneration and operation of the receiver is much easier to control in conjunction with the infinite impedance detector much favoured by the designer (with excellent results).

Personally, I think the success of this receiver is directly due to the designer's choice of a separate regeneration transistor. Careful design of this stage means that the tremendous amount of gain that's possible - is carefully controlled - with splendid results.



● Fig. 1: The Wurzel kit, as received and before assembly. When built, the kit provides a 9 to 15V operated, 3.5, 7 and 14MHz coverage, tuned radio frequency receiver (t.r.f.) with a regenerative detector.

Regeneration reminder: Regeneration is achieved by using a controlled level of feedback (familiar as 'howl round' achieved at audio frequencies when a microphone picks up the output from the amplifier and loudspeaker it connected to). The feedback enables to signal to be amplified many times (as it passes through the circuitry) and with the careful control it can be used

extremely effectively at the 'threshold' (at the point of oscillation) for reception of amplitude modulated transmissions, and just past the threshold (just into oscillation) for reception of single sideband (s.s.b.) transmissions and c.w. (Morse) transmissions.

Five transistors are used, along with one zener diode (for voltage stabilisation) and one standard diode. The r.f. and detector stages use 2N3189 f.e.t. s, and the regeneration stage employs a BC182. Audio amplification is provided by two BS170 f.e.t.s, for use with the lightweight headphones provided for portable cassette players.

The receiver is assembled on one printed circuit board (p.c.b.) with another section of p.c.b. material providing the control panel, for tuning, etc. It's an extremely simple and effective way of providing working project...and as you know it's an approach much favoured by G3XFD himself!

The kit is provided with **excellent instructions** (worded in a similarly friendly way as I've adopted for the RB series, so much so that I felt Tim was watching over me as I built it) on a series of A4 printed sheets - with much helpful advice from Tim himself - a block diagram, circuit and placement diagrams.

Built & Working

I built the kit over a weekend and it was soon working very well indeed. However, I'm not going to **specify exactly how long it took me to complete**... for reasons which will be made obvious in the August issue of *PW*! But of course, the time taken for construction will depend entirely on the individual constructor, workshop conditions and experience.

Tim Walford does not provide a p.c.b. which is over-printed with component placement identification marks. However, with the comprehensive lay-out diagram he supplies, along with the wiring interconnection diagram (this is clearly labelled alphabetically both on the main p.c.b. and the well presented (clearly drawn) line diagram in the instructions) I had no problem whatsoever in assembling the kit.

Although Tim states that he doesn't regard the Wurzel kit as being suitable for beginners, after my own experience I can confidently suggest that if you've built any of the RB projects...you'll have no problems at all in building the kit.

All I recommended is that you build it with the help of good lighting, and you follow Tim's sound advice. This is particularly important when it comes to soldering connections as the double-sided (the main p.c.b. has a ground plane on the topside) p.c.b. Incidentally, he points out in his instructions that problems can be avoided...if you follow the advice. (I did, and agree with Tim - I had no problems at all).

A good lightweight soldering iron (I used my favourite Antex 12V iron, and worked under a desk lamp. And on completion it worked first time!

On The Air

My workshop (in my new home) is not yet fully operational, and I had built the receiver on the proverbial table-top - in this case my computer desk work-station in my office/study/bedroom. This is on the ground floor of the house and I have a wire feed to a 10m long (30ft or so) fibreglass telescopic fishing rod vertical antenna (previously featured in *PW*). An earth for radio use is provided on the patio outside.

Reception on 3.5 and 7MHz was excellent bearing in mind the simple nature of the receiver. With direct connection of the antenna wire I could receive c.w. and enjoyed listening into the activity on the band. As supplied and set-up approximately 50kHz of each band is covered - and this can be altered with experimentation. At the top end of 7MHz - nearer the 41 metre band I found that 'breakthrough' from the powerful international broadcasters could be successfully limited by using my antenna tuning unit (a.t.u.) and careful use of regeneration control and the Wurzel's switched attenuator.

Reception of the many different broadcasts on 41m was very good and despite my nearby transceivers (with general coverage) the delight of using something I'd just built myself led to hours of compelling headphone listening!

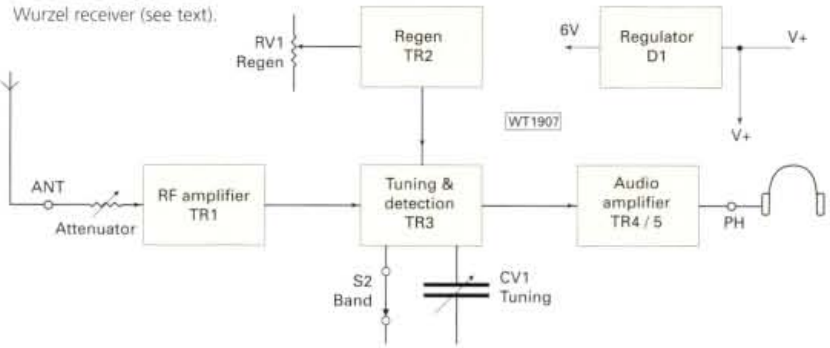
On the 14MHz band I adjusted coverage so I could listen out for the IBP c.w. beacons on 14.1MHz. (A challenge because of the adjacent frequency packet transmissions). To my surprise and delight I heard the CS3B beacon in Madeira very strongly - despite the QRM from the packet. (Reception of the beacons can be very difficult for this reason, even using triple conversion superhets!). I then tuned up to the s.s.b. section of the band and heard an s.s.b. station from the same Island. Great fun!

So, in finalising this report on my 'Construction Experience' **I thoroughly recommend the kit for RB readers**. It requires some skill to build and to operate it, ideal for the learning process. But if it can encourage a somewhat jaded (at times) G3XFD - who thinks he's seen it all - imagine what the experience could do for you!

Good luck and good listening with Wurzel!

PW

● Fig. 2: Block diagram showing the various stages of the Wurzel receiver (see text).



● Fig. 3: The completed Wurzel receiver kit. Rob says that "Building it is only half the fun...the thrill of hearing stations half a world away on such a simple receiver you've built yourself...has to be felt to be believed".

Buying The Wurzel

The Wurzel kit is available for £35 including P&P (cheques, postal orders but no credit cards please) from **Tim Walford G3PCJ, Walford Electronics, Upton Bridge Farm, Long Sutton, Langport, Somerset TA10 9NJ. Tel: (01458) 241224, FAX: (01458) 24186., E-mail walford@globanet.co.uk**

HAYDON Communications

Mail order: 01708 862524 For main product lines see over

PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE VERIFY BEFORE ORDERING. E&OE. NEXT DAY DELIVERY TO MOST AREAS. £10.00.

NEXT DAY DELIVERY TO MOST AREAS, £10.00.

New MOBILE PENETRATOR

1.8-30MHz (200W PEP) mobile antenna – no ATU required. Length 102" (52" collapsed). Fits 3/8 mount (SO239 feed point)
INTRO PRICE **£129.95** delivery £10

Optional magnetic base £24.95
Optional body mount (hole) £12.99
Roof bar mount requires cable kit £9.95
Cable kit £7.99

Q-TEK PENETRATOR

"We've sold 100s all over Europe"

★ 1.8 - 60MHz HF vertical ★ 15 foot high ★ No ATU or ground radials required ★ (200W PEP).

ONLY **£179.95** delivery £10

SEND SAE FOR LEAFLET

Wire version now available 45ft long end fed. (1.8-60MHz) spec. as above. Price £159.95.

Q-TEK ZL SPECIALS

Delivery £10.00

2m	5ele (boom 45"/9.9dBd)	£49.95
2m	7ele (boom 60"/12.5dBd)	£54.95
2m	12ele (boom 126"/14.5dBd)	£79.95
70cm	7ele (boom 28"/12.5dBd)	£39.95
70cm	12ele (boom 48"/14.5dBd)	£59.95

Q-TEK YAGIS

Delivery £10.00

2m	5ele (boom 63"/10.5dBd)	£49.95
2m	8ele (boom 125"/13dBd)	£64.95
2m	11ele (boom 156"/13.5dBd)	£94.95
2m	5ele crossed (boom 64"/10.5dBd)	£79.95
2m	8ele crossed (boom 126"/13dBd)	£99.95
4m	3ele (boom 45"/8.5dBd)	£56.95
4m	5ele (boom 128"/11.5dBd)	£69.95
6m	3ele (boom 72"/8.5dBd)	£59.95
6m	5ele (boom 142"/11.5dBd)	£79.95
70cm	13ele (boom 76"/14.9dBd)	£46.95
70cm	13ele crossed (boom 83"/14.9dBd)	£79.95

DELUXE G5RV

Multi-stranded heavy duty flexweave wire. All parts replaceable. Stainless steel and galvanised fittings. Full size - 102ft.

ONLY **£42.95**
Half size 51ft. Only **£36.95**
Carriage £6.50.

Choke Balun — Inline balun for G5RV ..... £24.95 P&P £3

STANDARD G5RV

Full size	102ft	£24.00 P&P £6
Half size	51ft	£21.00 P&P £6

Q-TEK INDUCTORS

80mtr inductors + wire to convert ½ size G5RV into full size. (Adds 8ft either end) ..... £24.95 P&P £2.50 (a pair)

Q-TEK 80-10M TRAP DIPOLE KIT

Complete kit (34 metres long)
Ideal for any use (including M-3) ..... £79.95 P&P £10.00

BALUNS & TRAPS

1.1 Balun		£25.00 P&P £2
4.1 Balun		£25.00 P&P £2
6.1 Balun		£25.00 P&P £2
40 mtrs	Traps	(a pair) £25.00 P&P £4
80 mtrs	Traps	(a pair) £25.00 P&P £4
10 mtrs	Traps	(a pair) £25.00 P&P £4
15 mtrs	Traps	(a pair) £25.00 P&P £4
20 mtrs	Traps	(a pair) £25.00 P&P £4

1kw Handling

CUSHCRAFT ANTENNA SALE

MA5V	New vertical 10, 12, 15, 17, 20m	~~£229.95~~	£215.00
MA5B	Mini beam 10, 12, 15, 17, 20m	~~£349.00~~	£299.95
A3S	3 ele beam 10, 15, 20m	~~£499.95~~	£449.95
A4S	4 ele beam (10-20m)	~~£599.95~~	£529.95
R-6000	Vertical 6, 10, 12, 15, 17, 20m	~~£349.95~~	£315.95
R-8E	Vertical (14-10m)	~~£499.95~~	£449.95
X-7	7 ele 10, 15, 20m	~~£999.00~~	£599.95

Q-TEK COLINEARS

P&P £10.00

Glassfibre construction

QT-100 GF 144/70, 3/6dB (1.1m)	£39.95
QT-200 GF 144/70, 4.5/7.2dB (1.7m)	£54.95
QT-300 GF 144/70,6.5/9dB (3m)	£69.95
QT-500 GF 144/70, 8.5/11dB (5.4m)	£125.95
QT-627 GF 50/144/70, 2.15/6.2/8.4dBi (2.4m)	£69.95

MOBILE ANTENNAS

P&P £7.00

DB-770M	2m/70cm (3.5 - 5.8dB) 1m PL-259	£24.95
DB-7900	2m/70cm (5.5 - 7.2dB) 1.6m PL-259	£39.95
PL-62M	6m + 2m (1.4m) PL-259	£19.99
NR-627	6m/2m/70cm. (2.15/4.5/7.2dB)	£54.95

5 BAND (10-20m) MOBILE ANTENNA
3/8 FITTING **£30.00**

COPPER ANTENNA WIRE

Enamelled (50m roll)	£12.95 P&P £5
Hard drawn (50m roll)	£13.95 P&P £5
Multi-Stranded (Grey PVC) (50m roll)	£9.95 P&P £4
Flexweave (H/duty 50 mtrs)	£30.00 P&P £5
Flexweave H/duty (20 mtrs)	£15.95 P&P £5
Flexweave (PVC coated 20 mtrs)	£18.95 P&P £5
Flexweave (PVC coated 50 mtrs)	£40.00 P&P £6.50
Copper plated earth rod (4ft)	£13.00 P&P £6
Copper plated earth rod (4ft) + 10m wire	£18.99 P&P £6

RECHARGEABLE ALKALINE CELLS

Starter kit includes charger & 4 x AA cells. **£14.99** + £2.50 P&P.

Please note that only the special cells can be recharged with this charger.

Extra cells available @ 8 x AA pack £10.99 £1 P&P
4 x AA pack £5.99 £1 P&P 4 x AAA £6.25 £1 P&P. Rechargeable Alkaline. No memory effects. 1.5V cells. 3 x capacity of nicads.

COAX BARGAINS

RG-213 Mil spec x 100m.
ONLY **£69.95** P&P £10
RG-58 Mil spec x 100m.
ONLY **£35.00** P&P £10.00

COAX SWITCHES

(P&P £4.50)

2 way CX-201 (0-1GHz) SO239	£18.95
2 way CX-201 'N' (0-1GHz) 'N'	£24.95
4 way CX-401 (0-500MHz) SO239	£54.95
4 way CX-401 'N' (0-500MHz) 'N'	£59.95

NISSEI PWR/SWR METERS

RS-502 1.8-525MHz (200W) ..... £79.95 P&P £5
RS-102 1.8-150MHz (200W) ..... £59.95 P&P £5
RS-402 125-525MHz (200W) ..... £59.95 P&P £5
RS-3000 1.8-60MHz (3kW) Incls mod meter £79.95 P&P £5
RS-40 144/430MHz Pocket PWR/SWR ..... £34.95 P&P £2

CAROLINA WINDOM

CW-160	(160-10m)	£120.00 P&P £8.50
CW-80	(80-10m)	£95.95 P&P £8.50
CW-80S	Special (½ size)	£99.95 P&P £8.50
CW-40	(40-10m)	£89.95 P&P £8.50

Wimdoms are ½ or end fed ..... P&P £8.50

INTERFERENCE STOP IT

Rectangular snap-fixing ferrite cores suitable for :- Radio coax/TV/mains/telephone/PC & data cables. Plastic teeth prevent it from sliding on cable. Simply snap close onto cable and job is done!

Bulk purchase hence **2 for £7.95** (P&P £2.50)

FERRITE RINGS

10 for **£10.00** P&P £3.00 *or*
20 for **£15.00** P&P £4.00
Superb quality

TELESCOPIC MASTS

6 section telescopic masts. Starting at 2½" in diameter and finishing with a top section of 1¼" diameter we offer a 8 metre and a 12 metre version. Each mast is supplied with guy rings and stainless steel pins for locking the sections when erected. The closed height of the 8 metre mast is just 5 feet and the 12 metre version at 10 feet. All sections are extruded aluminium tube with a 16 gauge wall thickness.

8 mtrs **£99.95** 12 mtrs **£139.95** *Carriage £10.00.*
Telescopic mast lengths are approx.

Tripod for telescopic masts £89.95

20ft BARGAIN MAST SET

4 x 5' lengths of approx 2" extruded (16 gauge) heavy duty aluminium, swaged at one end to give a very heavy duty mast set.

OUR LOW PRICE **£39.95** Del £10

TWO FOR £75 — *2 for £75.00* Del £12.50
THREE FOR £99 — *3 for £99.00* Del £15.00

BARGAIN MAST SETS

Set A: 5 section 21ft long (1⅛") mast set
£23.95 Del £10.00.

TWO FOR £39

Set B: 5 section 16ft long (1⅛") mast set
£19.95 Del £10.00. (2 sets £35.00)

ALUMINIUM POLES

ALL MEASUREMENTS ARE APPROX.

2" x 1.5m length	2mm wall thickness	£12.50 P&P £10
2" x 2.5m length	2mm wall thickness	£19.99 P&P £10
2" x 10ft collection only	2mm wall thickness	£24.99
2" x 12ft collection only	2mm wall thickness	£29.99
2" x 20ft collection only	2mm wall thickness	£39.99

FIBRE GLASS POLES

NB. We can only deliver up to 2.5m lengths

1½" Dia	Fibreglass available up to 5m lengths	£8.50 per metre *P&P £10*
1¾" Dia		£10.50 per metre *P&P £10*
2" Dia		£12.50 per metre *P&P £10*

DIPOLE CENTRE PIECES

Open wire	£5.50
SO-239	£5.99

METAL WORK & BITS

MAST HEAD PULLEY

A simple to fit but very handy mast pulley with rope guides to avoid tangling. (Fits up to 2" mast).

£8.95 + P&P £2.50

2"	Mast base plate	£12.95 P&P £5
6"	Stand off	£6.95 P&P £5
9"	Stand off	£8.95 P&P £5
12"	T&K Brackets	£12.00 P&P £8
18"	T&K Brackets	£18.00 P&P £8
24"	T&K Brackets	£20.00 P&P £8
10mm fixing bolts		£1.40 each
U bolts (1½" or 2")		£1.20 each
8 nut universal clamp (2" - 2")		£5.95
2" - 2" cross over plate		£10.95
3-way guy ring		£3.95
4-way guy ring		£4.95
2" mast sleeve		£9.95
1½" mast sleeve		£8.95
Standard guy kits (with wire)		£24.95 P&P £6
Heavy duty guy kits (with wire)		£29.95 P&P £6
Ground fixing spikes (3 set)		£18.00 P&P £6
30m pack nylon guy 4.4m/B/load 480kg		£10.00 P&P £2
30m pack (3mm dia) winch wire		£16.00 P&P £4
Self amalgamating tape (roll)		£6.50
'Nylon' dog bone insulators		£1.00 each
Chimney lashing kit		£12.99

HAYDON Communications

For accessories see over

Mail order: 01708 862524

NEXT DAY DELIVERY TO MOST AREAS, £10.00.

PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE VERIFY BEFORE ORDERING. E&OE.

receivers

JRC NRD-545 DSP

The ultimate short wave receiver with DSP - for the real perfectionist.

OUR PRICE **£1249.00** Del £10.00

NVA-319 Extention speaker £189.00
CHE-199 VHF/UHF converter £269.00

SONY SW-30

The ideal holiday partner!
★ Fully digital world receiver ★ FM/MW/SW ★ Covers all short wave broadcast/MW plus FM stereo (on h/phones) ★ Programmable memories ★ Sleep timer + alarm function ★ 1kHz tuning for short wave.

RRP £79.95.

HALF PRICE **£39.95** P&P £7.50

2 YR G'EE

ICOM IC-R75

The short wave receiver for the true enthusiast.
- 0.03-60MHz (all mode)
- Synchronous AM detection
- PC control capability.

★★★★ *WRTH* gave it 4 star rating.

Optional DSP unit £85.00

OUR PRICE **£589.00**

SP-21 extention speaker £74.99

SANGEAN ATS-505

NEW! Wins Dutch "Automobile" award. Excellent small short wave receiver (digital).
0.15-30MHz (AM, USB, LSB, CW). 88-108MHz FM stereo.
Includes carry case.

OUR PRICE **£89.00** P&P £10

Optional power supply £16.95

REALISTIC DX-394

★ Superb performance SW receiver ★ 0.2-30MHz (all mode) ★ Selectable tuning steps (down to 100Hz) ★ 240 or 12V ★ Digital S-meter ★ Attenuator ★ Key pad entry ★ 160 memories ★ Noise blanker. Was ~~£299.00~~.

OUR PRICE **£149.95** P&P £10

SONY SW-100E

★ Miniature portable all mode SW receiver ★ Station presets for 50 frequencies ★ Single side band system ★ Synchronous detector ★ Tuning in 100Hz + 1kHz steps ★ Includes compact antenna/stereo earphones/ carrying case.

OUR PRICE **£149.95** P&P £10

ACE-30 Power supply unit for above £24.95
AN-100 Active antenna £64.95

scanners

NEW UBC-278CLT

New base scanner with built-in clock radio. 25-956MHz (with gaps) 88-108MHz (WFM) 500kHz-1720kHz (AM). Fully programmable. Ideal for the bedroom.

OUR PRICE **£139.95**
Delivery £10.00

ALINCO DJ-X3

Micro-handy scanner. 100kHz-1300MHz. 700 memories/stereo FM (earphones)/ attenuator/bug detector/audio descrambler. AM/FM/WFM/ Selectable tuning steps (incl's 8.33kHz).

£115.00

Optional battery pack and drop in charger £39.99

UBC-780XLT

New comprehensive scanner (25-1300MHz) Alpha Tag, PC clonning control. Smart scanner + trunk track facilty.

~~£349.00~~

OUR PRICE **£299.99**

NEW ALINCO- X10

BEGINNER FRIENDLY!!!
Fully featured handie. 100kHz-2GHz (S.S.B./CW/FM/WFM/AM)
DUAL VFOs/Band Scope/PC Programmable. Inc' NiCads/Charger.

~~£299~~ OUR PRICE **£249**

YAESU VR-5000

0.1-2.6GHz all mode receiver with DSP (optional) plus bandscope/world clock and too much more to print.

OUR PRICE **£575.00** (incl's PSU)

Optional DSP £79.95

NEW ALINCO X-2000

The intelligent scanner! 100kHz-2.15GHz. All mode incl's SSB, "Flash Tune" reads frequency of nearly of nearby signal & tunes the handie for you. Incl's battery, charger & loads more.

A SNIP @ **£449.95**

Optional case £15.00

DJ-X10 ..... Sale price £249.00

garmin sale

STREET PILOT III

Now with "voice prompts" as well as direction indication. Incl's: Map CD, 32 meg cart & data card, power lead & mount. The ultimate in talking GPS's.

SALE PRICE **£849.00**

GARMIN GPSIII+

Powered by AA cells or 13.8V, this compact navigational system gives detailed maps of the UK & Europe. Supplied with data lead and on-board maps.

★ LIMITED STOCK ★

SALE PRICE **£279.00**

GARMIN SALE

GPS Map 76	£359.99
GPS III+	£319.99
Etrex Vista	£349.99
Etrex	£135.00
E-Map	£299.00
GPS-12	£135.00
Street Pilot Mono kit	£399.99
Street Pilot Colour kit	£599.99
8-meg card sale	£39.99
16-meg card sale	£65.00
32-meg card	£95.00
64-meg card	£145.00
128-meg card	£249.00

special interest

SGC-230

200W instant auto ATU. Tune any length of wire with this superb ATU. (Minimum length applies.)

OUR PRICE **£309.00**

SGC-237 HF+6m Tuner	£319
SGC-239 Mini Tower	£239
Optional earth stake	£13.00
Smart lock	£59.95

QS-300

A fully adjustable desk top stand for use with all hand-helds. Fitted coxial lead with BNC + SO239 connections.

OUR PRICE **£10.00** P&P £3.00

AR788 NEW MODEL

Quality rotator for VHF/UHF. Superb for most VHF-UHF yagis, 3 core cable required. £49.99. 3 core cable 50p per mtr.

OUR PRICE **£39.99**

AR-201 ..... Thrust bearing for above only £13.99

QS-200

Superb quick fit dash mount for hand-helds. £9.99.

OUR PRICE **£4.99** each
P&P £2.00

3 for **£10.00** P&P £3.50

T-127 ROTATOR KIT

Easy, rapid fit aerial rotator for domestic and mobile application. Ideal for lightweight antennas/cameras. Supplied with:- fitting hardware, 10m cable & control box. (requires 4AA or 6V DC).

OUR PRICE **£25.00** P&P £5.00

BARGAIN WINCH

500kg brake winch.
BARGAIN PRICE ~~£129.95~~.

OUR PRICE **£59.95** del £8.50

Winch wall bracket £19.99

hf transceivers

NEW IC-7400

HF+6m+2m, All mode, 32bit DSP for outstanding signal enhancing.

~~£1549~~ OUR PRICE **£1399**

ICOM IC-706II G

Now on its 3rd generation, this classic all-band transceiver is still our No. 1 best seller. HF + 6m + 2m + 70cm. *2 year warranty.*

LATEST UK MODEL

SALE PRICE **£829.00**

AT-180 Auto A.T.U. £339.00

ALINCO DX-70TH

100W HF + 6m transceiver.
SSP £699.00
SAVE £100

LATEST UK VERSION

ONLY **£599.00**

EDX-2 Remote ATU ..... OUR PRICE £259.00

KENWOOD TS-570DGE

In our opinion, the best HF transceiver below £1500. OUR PRICE

INCLUDES ATU

£799.00

SP-23 matching speaker £68.95

KENWOOD TS-870S

TRUE IF DSP TRANSCEIVER
When only the best will do!

STILL OUR No1 SELLER!

SALE PRICE **£1249.00**

SP-31 matching speaker £79.95

KENWOOD TS-2000

New all mode multibander: HF/50/144/430 optional 1200MHz. Optional UT-20 (1200MHz module) £299.00

Free PS-1225 power supply with above

SALE **£1599.00**

TS-50S Latest Version £549.95
TSB-2000 + RC-10 ..... special offer £1499.00

power supplies

NISSEI PS-300

ULTRA QUIET FAN

OUR BEST SELLER

Features: ★ Over voltage protection ★ Short circuit current limited ★ Twin illuminated meters ★ Variable voltage (3-15V) latches 13.8V ★ Additional "push clip" DC power sockets at rear ★ Multiple front outlets ★ Detatchable IDC lead (supplied) for mains connection. *Superb 30 amp/12V*

A SNIP AT **£119.95** Del £10

NEW NISSEI PS-1225

ULTRA QUIET FAN

25A @ 13.8V yet lighter than an IC-706 but about the same size.
Features: ● Ultra quiet fan ● Over voltage/current protection ● Weighs ~ 1.8kgs ● Size: 57 x 177 x 190mm ● Additional sockets at front & rear.

~~£79.95~~ **£59.95** Delivery £10.00

NISSEI PS-1020

New 25A. PSU.

● Volts adjust (9-15vdc) ● Light in weight: 2.1kg ● Automatic shutdown on load fault ● Ultra quiet cooling fan ● Over volts protection ● Compact size 190W x 120H x 225D mm. ~~£89.95~~

OUR PRICE **£79.95** Delivery £10.00

easy hf

YAESU FT-817

100kHz-440MHz (with gaps). All mode transportable. Includes nicads/charger. O/P:- up to 5W. £799.00

SPECIAL PRICE **£549.00**

OTHER YAESU BARGAINS

FT-847 ..... £1149.00
FT-1000MP V £2549.00

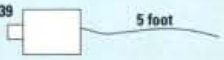
New MOBILE PENETRATOR

1.8-30MHz (200W PEP) mobile antenna – no ATU required. Length 102" (52" collapsed). Fits 3/8 mount (SO239 feed point)

INTRO PRICE **£129.95** delivery £10

Optional magnetic base £24.95
Optional body mount (hole) £12.99
Roof bar mount requires cable kit £9.95
Cable kit £7.99

New WIRE PENETRATOR



0.1-60MHz.
Simply connect coax and go.
NB: No ATU needed. Earth stake required. 100W FM max.

OUR PRICE **£159.95**

Vertical Penetrator £179.95

vhf-uhf radios

KENWOOD TH-F7E

TRUE DUALBANDER

Transceiver & scanner 2m/70cm Tx (5W). Rx:- 0.1-1300MHz, all mode (incl SSB). Incls:- Lithium ion battery & charger.

+ FREE REMOTE MIC

SALE PRICE **£249.00**

VC-H1 Kenwood camera £199.95

ALINCO DJ-596

NEW

2m + 70cm Handie.
Includes: (NIMH) Battery/Charger.
High + Narrow switchable.
High Power (4.5W) OP as standard.
Alpha Numeric Channeling.

OUR PRICE **£179.95**

KENWOOD TM-D700E

TRUE DUALBANDER

2m + 70cm transceiver with built-in modem and APRS facility. Optional extended Rx available. ~~£439.00~~

A true dual-band radio suitable for the most demanding operator.

A.P.R.S.

OUR PRICE **£425.00**

shack accs

YAESU G-450C

SAVE £'s

Heavy duty rotator for HF beams, etc. Supplied with circular display control box and 25m of rotator cable. GC-038 Lower mast clamps £25.00 GC-065 2" Thrust bearing £48.00.

SALE PRICE **£295.00** P&P £10

G650C £345.00
G-1000DXC £499.95
GC-038 ..... £25.00
GC-065 ..... £48.00
G-5500 Azimuth/elevation £535.00

D-308B BLACK DELUXE DESK MIC

(with up/down). Many amateurs using this mic (over 4000) have expressed extreme pleasure with it's performance.

£49.95 P&P £6.00

OPTIONAL LEADS (P&P £1.50)

A-08	8 pin "Alinco" round	£9.95
K-08	8 pin "Kenwood" round	£9.95
I-08	8 pin "Icom" round	£9.95
AM-08	Modular phone "Alinco"	£9.95
IM-08	Modular phone "Icom"	£9.95
KM-08	Kenwood modular lead	£9.95

Spare foram wind guard (M.C.) ..... £2.00 each

MFJ PRODUCTS

UK VERSION

MFJ-259B

HF digital SWR analyser + 1.8-170MHz counter/resistance meter.

ONLY **£239.95** P&P £6

MFJ-269	160-70cm analyser	£299.95
MFJ-949	300W ATU + dummy load	£149.95
MFJ-969	HF + 6m ATU	£179.95
MFJ-962D	1.5kW versa tuna	£249.95
MFJ-784B	DSP filter	£229.95
MFJ-461	Morse reader	£84.95

UK VERSIONS

THE VOLTAGE REGULATOR -Part 2

Gordon King G4VFV continues with his explanation of the voltage regulator by looking at the linear shunt-mode version this month.

In the May issue I looked at the series-mode linear voltage regulator and to follow on I'm starting this month with a look at the linear shunt-mode version, before concluding with a examination of the switching-mode version. The operation of the linear shunt regulator is similar to that of its series-mode counterpart, except that the controlling device now appears in parallel, or in shunt, with the output load.

A fair idea of how shunt regulation is accomplished can be gleaned from the basic circuit in **Fig. 1**. The first thing to notice is that the control transistor Tr1 is connected right across the load, with the collector going to the positive side and the emitter to the negative side of the supply. Because the transistor is an *npn* device current from the input will flow from collector to emitter through resistor R2 when the base is biased positively with respect to the emitter.

The bias for Tr1 base is obtained from the output of an op-amp integrated circuit (i.c.), which functions as an error amplifier. As with the series-mode circuit, examined in Part 1, where a transistor error amplifier was shown, the zener diode in Fig. 1, provides a similar reference voltage for the i.c., via R1.

With Tr1 conducting, the supply current through R2 will consist of the current through Tr1 plus the operating current drawn by the load. Now, should the load demand increase, the potential at the junction of the divider R3/R4 would tend to decrease. This would be communicated at the required polarity to the positive input port of the i.c., thereby reducing the positive bias at Tr1 base and hence the proportion of Tr1 current flowing through R2.

Conversely, should the load demand decrease, the bias at Tr1 base would increase, thereby turning on a greater proportion of Tr1 current through R2. In other words, regulation is provided by the effective resistance of the control transistor changing in opposition to the requirements of the load, such that the current flowing through R2 remains constant. This means that the power dissipated by the control transistor increases as the power demanded by the load decreases.

Tight Control

The actual value of the regulated voltage across the load is geared to the zener reference voltage, the gain of the i.c. and to the potential at the junction of the divider R3/R4. A host of different combinations are therefore possible for a given regulated output voltage, but with any regulator of this nature the control action is 'tightest' when the feedback to the error amplifier has the closest match to the actual voltage across the load. In other words, any loss of power resulting from the resistance of an extended feedback circuit carrying a high load current would tend to impair the quality of the regulation.

An example of a switched regulator is shown in **Fig. 2**. This is interesting because current passes from the unregulated supply to the load through the series regulator transistor Tr2 as the result of the transistor being pulsed into conduction.

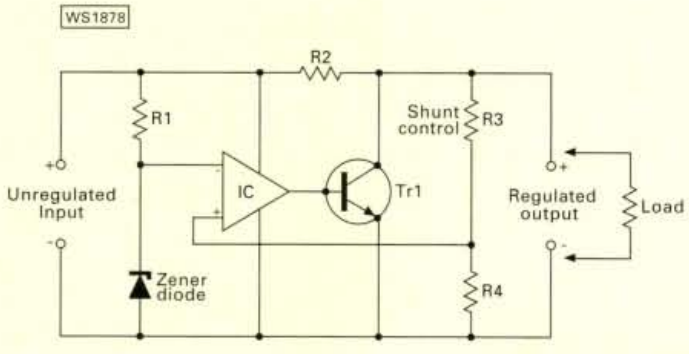


Fig. 1. Circuit of a simple shunt regulator using an i.c. as the error amplifier.

Square-Wave Switching

Transistors Tr3 and Tr4 constitute an emitter-coupled astable multivibrator which generates square-waves. These are fed to the base of Tr1 for switching this transistor between full conduction and non-conduction. Tr1 and Tr2 together form a Darlington Pair, referred to in Part 1.

The required load current and hence the stability of the output voltage are provided by the duration of the conduction of Tr1 and this is where transistors Tr5 and Tr6 come in. These two devices are arranged in the form a 'long-tailed pair' to serve as a reference and comparator.

The circuit works like this: a steady reference voltage is provided at Tr5 base by the zener diode which is fed from the output voltage through R7. A fraction of the output voltage is also applied to the base of Tr6 by way of the divider R10/ P1/R9, where potentiometer P1 acts as the output-voltage control. Any tendency for the output voltage to change due to a changing load requirement is reflected as a change in potential at the collector of Tr5, and hence at the base of Tr4.

High Efficiency

The duration of the switching pulses is determined by the level of this potential, the circuit being engineered so that the duration automatically increases or decreases to match an increasing or decreasing load demand, thereby holding the output voltage steady. This sort of circuit boasts relatively high efficiency and is also capable of translating a relatively high source voltage to a lower regulated output voltage at quite substantial power.

The diode D1 is known as a 'catch diode' which has the job of 'taming' the back e.m.f. induced across inductor L1 as the result of

the switching action. Final smoothing is provided by the electrolytic capacitor C2.

Monolithic i.c. regulators capable of handling quite high power are now readily available and commonly found in commercial equipment. Such devices often include thermal shutdown, fold-back overload protection and short-circuit protection. Some of these incorporate a mere three ports, known as 'three-terminal devices' one common to both input and output, the second for the unregulated input and the third for the regulated output.

Well, that about takes care of it again for now. In the next instalment I am proposing to start looking at the transmission side of things, and with a bit of luck commence with a single-valve Morse transmitter which was part of my life way back in the Second World War! PW

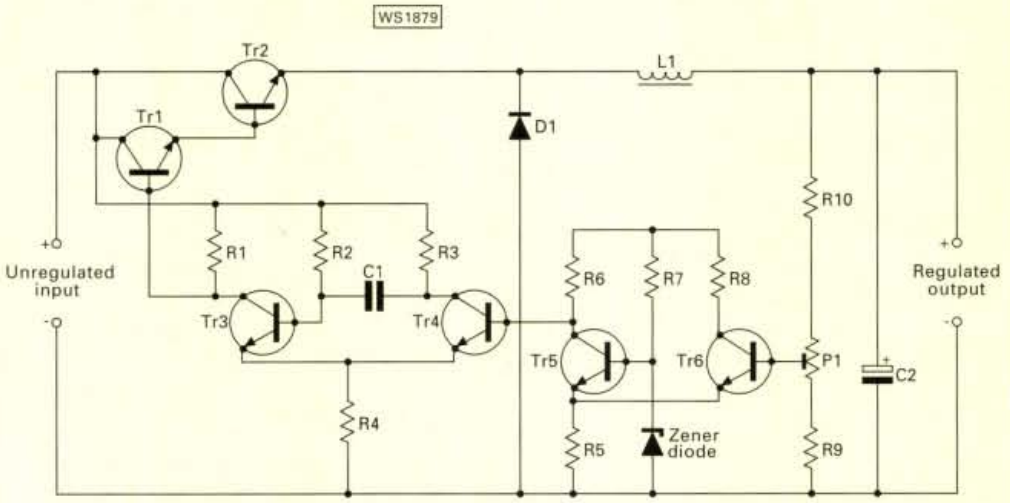


Fig. 2. A switching regulator like the circuit shown here is capable of translating a fairly high voltage unregulated input to a lower voltage regulated output at relatively high current and efficiency.

● What you get...the Carolina Windom 40 shown on arrival at GW0VSW's home.

On The Air With The Radio Works Caroli

Although extremely busy in his work as a television cameraman and compiler of *PW*'s HF Highlights, Carl Mason GW0VSW has found time to enjoy using an interesting antenna. Here he shares his pleasing results....

Many of us have to make do with simple antennas for our h.f. operating. There are many reasons for this, location, available space, planning restrictions or cost to name just a few.

Since obtaining my licence I have used many wire antennas with varying degrees of success from my location here in South Wales. However, I always seem to end up using either a half or full-size G5RV in an inverted configuration.

These antennas enable multi-band operation and to date have allowed me to work over 200 countries using both s.s.b. and c.w. However, during severe storms last year my latest antenna was badly damaged and despite hasty repairs it needed to be replaced.

The temptation was to put up another G5RV. However, after discussions with various operators including *PW* reporter **Mike Baker G3SUK** my attention turned to the Windom antenna. In particular those manufactured by **Jim Thompson W4THU** of Radio Works in the USA.

● The matching unit (see text).

Jim's website at **www.radioworks.com** contains a good deal of information and advice for prospective buyers of Radio Works products. All antennas are described in great detail including several Windoms, which are available in various lengths to cover all frequencies from 1.8 to 28MHz.

Not Critical

Configuration of the antenna is not critical and it can be installed as either a flat top, inverted-V, inverted-U or as a 'sloper'. A fixed length of coaxial cable forms a vertical radiator that connects between a Matching Unit and a 50Ω Line Isolator.

With the dipole and vertical section you get both horizontal and vertical polarisation which should work well for both local and DX contacts. As my main support was going to be a metal mast my concern was the vertical radiator. This is used on all models and should be kept well clear of anything conductive. If not, some detuning and reduction in antenna performance can be expected.

After much thought and several E-mails to Jim I finally decided to order the **Carolina Windom 40** from Waters & Stanton, the UK importer. This is the half-size version of the antenna and is optimised for the higher bands.

The version I ordered has twice set the world record for miles-per-watt which now stands at 4,300,000 miles (6,918,700km!) achieved using just 96µW (**microwatts**) and without the benefit of Digital Signal Processing! At just 66ft (20m approx.) in length and covering all bands from 7-28MHz this would fit comfortably in the space I had available.

The antenna arrived in a strong plastic bag, containing the antenna wire with insulators already connected to a matching unit, a line isolator and 10ft (3m) of 50Ω coaxial cable with PL259s at either end, two tie wraps, coaxial sealant and a manual. This manual gives full product information with specifications on all antennas made by Radio Works and other useful sections including safety and installation for your chosen antenna.

Easy To Assemble

The Carolina Windom is very easy to assemble and the only work required is to connect the coaxial cable between the matching unit and line isolator. The instructions then recommend that the antenna be weatherproofed.

The weatherproofing is achieved by sealing all holes where wires exit the matching unit, line isolator and the plugs at either end of the coaxial cable. Personally, I'm sure that the sealant supplied is more than adequate for the job but decided to use some that I had already opened a few weeks earlier. It's very important not to miss out this stage, as some components are not water-resistant and could fail quickly in our unpredictable weather!

While the sealant dried I removed my mast and checked it thoroughly for any signs of damage. After two years of very mixed weather here in South Wales the aluminium poles were in good condition and I only needed to replace a few rusty nuts and bolts.

The antenna was then attached to the top of the mast with an eyebolt, which allowed some movement. The vertical radiator, line isolator and coaxial cable were then cable-tied along the mast. Although this is not recommended, I felt this would help reduce the risk of damage in high winds. Something we seem to be getting more of here in the UK!

Once this was completed the mast was repositioned and tightly clamped back into the wall brackets giving a maximum

na Windom 40

height of approximately 32ft (10m approx.). The ends were then secured to a convenient tree and a neighbour's garage using nylon cord around the supplied insulators. The antenna was now erected in an inverted V configuration running in a north/south direction.

Coaxial Feed Line

The manual recommends that the coaxial feed line should be 45, 70 or 166ft (13.7, 21.3, and 50.6m) in length when you use an automatic antenna tuner (a.a.t.u). This is because the feed line forms part of the antenna's matching system and is reactive on all bands.

Because my coaxial cable had just been replaced with RG-213 and as it was just over 75ft (22.8m) long, I left it in place. My Icom IC-737A transceiver has an internal tuner fitted so it would be interesting to see if it would allow me to operate on all bands without resorting to a manual tuner (where the length would not be so critical).

On The Air

I'm pleased to say that the internal tuner was able to match the Windom on all bands. During the first week...band conditions were excellent and I was able to work many new countries especially on the higher frequencies.

The 24MHz band was particularly good and my logbook was quickly filled with stations like A41LZ (Oman) 54, VP5/W5AO (Turks & Caicos) 59, F6AUS/HI9 (Dominican Republic) 58 and Bob AP2JZB in Karachi who gave me 57. (The best report I've ever had from Pakistan!). On the key followed 9K2HN (Kuwait) 589, A45XR (Oman) 579, D44CF (Cape Verde) 569 and FR5FD (Reunion) 569.

Interested to see how well it would perform using QRP power levels, I connected up my QRP Plus and with 5W of c.w. managed to work 76 countries on 7MHz during a weekend contest. Best DX included 8P9Z (Barbados), 6Y4A (Jamaica) and HC8N (Galapagos Islands) who, incidentally, was working an enormous pile-up at the time.

The fact that the antenna was inverted and the feeder connected to the mast did not appear to effect its efficiency.

Very Pleased

Having used antenna now for several months, I must say that so far, I'm very pleased with it. It was quick to install and the DX performance has been very good on all bands except 14MHz where both sent and received signal strengths are down on the half-size G5RV. Signals on the 21/24/28MHz bands are particularly strong and received reports using both s.s.b. and c.w. are better than those received on the G5RV.

The ability to install the antenna in various configurations should help those with restricted space. With the ability to operate on seven bands the Carolina Windom 40 should provide you with many DX contacts in the right conditions. It may just be the antenna you are looking for! PW

Manufacturer's Specifications

Frequency Coverage:	7-28MHz
Gain:	As much as 10dBd (Based on user
reports, Field evaluations and	product reviews)
Antenna length:	66ft (20m)
Polarisation:	Vertical and horizontal
Feed line:	RG-8X (Recommended) 50Ω coaxial cable
Matching method:	Dedicated Matching Unit and Tuner
Tuner:	Needed on all bands
Power rating:	1.5kW
Recommended Height:	>30ft (10m)

Weatherproofing the matching unit prior to final assembly of the antenna (see text).

The mast - on the side of Carl's home - which was used in conjunction with the Carolina Windom (see text).

Product

The Radio Works Carolina Windom 40 h.f. antenna.

Company

Waters & Stanton

Contact

Tel: (01702) 206835

Pros & Cons

Pros: *I'm very pleased with it. It was quick to install and the DX performance has been very good on all bands except 14MHz. Signals on the 21/24/28MHz bands are particularly strong and received reports using both s.s.b. and c.w. are better than those received on the G5RV.*

Cons: *On 14MHz both sent and received signal strengths were down on the half-size G5RV.*

Price

£94.95 plus P&P

Summary

The ability to install the antenna in various configurations should help those with restricted space. With the ability to operate on seven bands the Carolina Windom 40 should provide you with many DX contacts in the right conditions.

Supplier

Carl bought his Radio Works Carolina Windom 40 from ***Waters & Stanton PLC, 22 Main Road, Hockley, Essex SS5 4QS. Tel: (01702) 206835/204965, FAX: (01702) 205843****. Please check on latest availability of the product, and cost post and packing.*

Carl was delighted and commented: "The best report I've ever had from Pakistan" to contact AP2-JZB and receive his QSL card (see text).

TELEPHONE SALES ON:

01922 414796

Ask for Dave (G1LBE)

Open Mon-Fri 9.30 - 6.00pm. Sat 9.30 - 4.00pm

E&OE

WEB SITE: http://www.radioworld.co.uk

E-mail: sales@radioworld.co.uk

There is NO CHARGE for using credit cards

RAD

42 BROOK

WALSALL

WE ARE 5 MINS AWAY FROM J11 M6

Main dealers for Alinco, Icom, Yaesu & Kenwood

Manufacturers warranty on all new equipment

- About Us
- Map
- Adonis
- Alinco
- AOR
- Bearcat
- Comet
- Cushcraft
- Daiwa
- Icom
- Kent
- Kenwood
- MFJ
- Roberts
- Sirio
- Sony
- Tokyo
- Watson

WANTED
USED EQUIPMENT
PX WELCOME BEST PRICES PAID!

YAESU

ROTATORS IN STOCK

ROTATORS

G-1000DXC Rotator 1100kg/cm CE c/w control box & 25m cable RRP £599 .....**RWP £509.00**

G-2800SDX Rotator HD 0.2 degree CE c/w control box only 1 remaining RRP £1229 .....**RWP £999.00**

G-450C Rotator light duty CE c/w control box & 25m cable RRP £379 .....**RWP £325.00**

G-650C Rotator medium duty CE c/w control box & 25m cable RRP £499 .....**RWP £425.00**

OPTIONS

GC-038B	Mast clamp (brown)	**RWP £25.00**
GC-038G	Mast clamp (green)	**RWP £25.00**
GC-048	Mast clamp for G-2800SDX	**RWP £39.00**
GS-050	Stay bearing (small type)	**RWP £29.00**
GS-065	Stay bearing (medium type)	**RWP £45.00**

ICOM

IC-756 PROII

Icom's flagship. Colour screen, 32 bit prosessor. Absolutly fabulous.

£BEST UK PRICE!

IC-7400

Icom's latest HF/VHF with built-in tuner. 100 watts 32 bit, a DX machine for all frequencies.

£BEST UK PRICE!

IC-R8500

Probably the best wide band receiver available, coverage from 0.1-2GHz. Many 'top-end' features, 2 years warranty. **£1199.00**

IC-706 MKII G

Smallest DSP radio on the market. HF, 6m/2m/70cm. Detachable front. **£959.00**

IC-2800

Dual band mobile, colour display. Full duplex, inc. CTCSS, 50W output. Detachable front. List price £449.00. OUR PRICE **£395.00**

PRICE MATCH

Up to 5% extra discount may be available on selected items.

KENWOOD

TS-870S

Kenwood's top HF radio, DSP & IF. No need for filters, transmit Tx audio, fully adjustable, broadcast audio on SSB. A CW's operators dream. Plus Rx antenna tuner.

BARGAIN AT **£1299.00**

TS-50S

The first and still one of the best little mobile radios, dedicated for HF users. Don't miss out! Brand new with UK warranty. **£599.00**

TS-570DG

Still the only HF monoband mobile radio with DSP and ATU built in for under £1000.00.

RADIOWORLD PRICE **£829.00**

TM-D700E

The latest dual bander, dual display, built-in TNC, APRS locating system, alpha-numeric.

OUR PRICE **£429.00**

TM-G707

Dual band, detachable front, clear display. No squinting! Bullet proof front end. List price £319.00.

OUR PRICE **£279.00**

KENWOOD TS-2000

All mode multi-bander HF/6m/2m/70cm optional 23cm, DSP, built-in keyer, large amber coloured backlit LCD.

RWP **£1649.00**

TM-V7E

Cool blue display, dualband, packet ready, detachable front. List price £419.00. OUR PRICE **£379.00**

TH-D7E

The world's first handie with built-in TNC, plus APRS, CTCSS searching system, metallic silver finish.

OUR PRICE **£299.00**

TH-G71E

Dualband handie, reliable and rugged. List price £279.00.

OUR PRICE **£210.00**

while stocks last

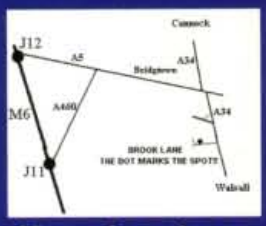
TH-F7E

Simultaneous dual Rx. 0.1-1300MHz. AM, NAM, FM, WFM, SSB, CW. Lithion ion battery & charger. (2m & 70cm Tx SW).

£269.00

IO WORLD

LANE, GREAT WYRLEY,
, WEST MIDLANDS WS6 6BQ



Here is where we are

Tel sales & service: 01922 414796 Fax: 01922 417829

USED EQUIPMENT PRICE LIST

MAKE	MODEL	DESCRIPTION	PRICE
ADI	AR-146	2m FM 50W MOBILE	£130
AKD	4001	4m TRANSCEIVER	£130
AKD	6001	6m FM TRANSCEIVER	£135
ALINCO	DJ-580E	2/70CM HANDY TRANSCEIVER	£140
ALINCO	DJ-G1	HANDY TRANSCEIVER	£120
ALINCO	DJ-G5EY	DUAL BAND HANDY	£199
ALINCO	DJ-X1	RECEIVER	£90
ALINCO	DJ-X10	WIDE BAND RECEIVER	£275
ALINCO	DR-140	2M MOBILE TRANSCEIVER	£120
ALINCO	DR-150E	2M 50W MOBILE TRANSCEIVER	£140
ALINCO	DR-M06	6M FM TRANSCEIVER	£160
ALINCO	DR-M065X	6M 10Watt MOBILE TRANSCEIVER	£140
ALINCO	EDX-1	ATU	£140
AOR	AR-1500	HANDY SCANNER 0-1500M /72	£99
AOR	AR-3000	WIDE RECEIVER	£350
AOR	AR-3000A	WIDE RECEIVER	£475
AOR	AR-3030	HF / VHF RECEIVER Inc converter VHF	£450
AOR	AR-3030	HF RECEIVER	£399
AOR	AR-7030	TOP RECEIVER	£550
AOR	AR-7030+	HF RECEIVER (With AM Filter, Optical Encoder)	£650
AOR	AR-8000	WIDE BAND RECEIVER	£199
AOR	AR-8200 mk1	WIDE BAND RECEIVER	£230
AZDEN	PCS-4000	2M TRANSCEIVER	£99
BNOS	AMPLIFIER	432-10-50 70CM 50Watt	£99
CAPLO	SPL-3000	ANTENNA TUNING UNIT	£199
DAIWA	CNW-419	ATU	£190
DAIWA	CNW-518	1KW AUTO ATU	£199
DAIWA	NS-660P	SWR &PWR MTR	£40
DAIWA	CN-540	SWR &PWR MTR	£30
DAIWA	CN-630	SWR &PWR MTR	£40
DATONG	FL3	FILTER	£75
DATONG	FL-2	FILTER	£60
DRAKE	MN7 ATU	300 WATT INPUT	£140
DRAKE	R7	HF RECEIVER	£550
DRAKE	R-8E	HF RECEIVER	£499
DRAKE	SW-2	HF RECEIVER	£299
DRAKE	SW-8	WORLD BAND RECEIVER	£375
DRESSLER	D200	2M MAINS AMPLIFIER 400Watt	£399
FAIRHAVEN	RD-500	WIDE BAND RECEIVER	£575
ICOM	AT-150	AUTO ATU	£175
ICOM	AT-500	AUTO ATU	£275
ICOM	IC-2000H	2/70 MOBILE TRANSCEIVER	£170
ICOM	IC-2100H	2M MOBILE TRANSCEIVER	£150
ICOM	IC-251	2m MULTIMODE TRANSCEIVER	£295
ICOM	IC-275E	25W TRANSCEIVER	£525
ICOM	IC-275H	2M MULTIMODE 100W TRANSCEIVER	£575
ICOM	IC-290H	2M MULTIMODE MOBILE TRANSCEIVER	£250
ICOM	IC-2KL	AUTOMATIC LINEAR AMPLIFIER + PSU	£999
ICOM	IC-3230H	2-70CM MOBILE TRANSCEIVER	£160
ICOM	IC-471E	70CM BASE MULITMODE TRANSCEIVER	£299
ICOM	IC-490E	70cms MULTIMODE MOBILE TRANSCEIVER	£265
ICOM	IC-728	HF TRANSCEIVER	£399
ICOM	IC-730	HF TRANSCEIVER MINT!	£400
ICOM	IC-735	HF TRANSCEIVER	£400
ICOM	IC-737	HF BASE BUILT IN ATU 100W	£595
ICOM	IC-737	HF inc ATU BASE STATION TRANSCEIVER	£575
ICOM	IC-746	TRANSCEIVER	£899
ICOM	IC-756	HF / 6m All Band Transceiver	£999
ICOM	IC-756PRO	ICOM TRANSCEIVER	£1,699
ICOM	IC-765	HF BASE TRANSCEIVER	£800
ICOM	IC-775DSP	HF 200W BASE STATION TRANSCEIVER	£1,499
ICOM	IC-820	2-70CM BASE STATION 50Watt	£599
ICOM	IC-821H	VHF / UHF MULTIMODE TRANSCEIVER	£699
ICOM	IC-910	2/70 CM BASE TRANSCEIVER + 23CM UNIT	£1,100
ICOM	IC-R2	HANDY SCANNER	£99
ICOM	IC-R3	SCANNER + TV	£299
ICOM	IC-R7000	RECEIVER MINT! CONDITION	£550
ICOM	IC-R72	RECEIVER	£399
ICOM	IC-R75	HF / 6m RECEIVER	£475
ICOM	IC-T81E	QUAD BAND HANDY 2m/6m/23cm/70cm	£250
ICOM	IC-T8E	HANDY TRANSCEIVER	£175
ICOM	IC-W21E	HANDY TRANSCEIVER	£199
ICOM	PCR-1000	COMPUTER SCANNER	£200
ICOM	PS-15	20A POWER SUPPLY FITS ALL ICOM	£110
ICOM	PS-85	POWER SUPPLY	£175
ICOM	R-75	HF RECEIVER	£400
ICOM	SP-20	SPEAKER	£120
ICOM	SP-21	LOUDSPEAKER, BOXED	£55
ICOM	T-7E	2/70CM HANDY TRANSCEIVER	£170
ICOM	T-8E	2/70CM 6M HANDY TRANSCEIVER	£185
ICOM	UT-84	TONE SQUELCH UNIT	£25
ICOM	IC-2SET	2M HANDY	£89
ICOM	IC-R71E	RECEIVER	£399
JRC	JST-245 DSP	HF 50MHz 1500w AC BASE TRANSCEIVER	£1,295
JRC	NRD-535	HF RECEIVER	£600
KANTRONICS	KAM PLUS	TNC	£220
KENWOOD	DFC-230	FREQUENCY CONTROLLER	£70
KENWOOD	PS-20	10A POWER SUPPLY FITS TR-9130 ETC	£55
KENWOOD	PS-430	POWER SUPPLY	£100
KENWOOD	PS-50	POWER SUPPLY	£145
KENWOOD	R-5000	RECEIVER	£499
KENWOOD	SP-950	LOUDSPEAKER	£90
KENWOOD	SW-2000	SWR METER	£60
KENWOOD	TH-22E	2M HANDY TRANSCEIVER	£89
KENWOOD	TH-25E	HANDY TRANSCEIVER	£49
KENWOOD	TH-47E	HANDY TRANSCEIVER	£100
KENWOOD	TH-75E	2/70 HANDY TRANSCEIVER	£125
KENWOOD	TH-78E	2/70CM HANDY TRANSCEIVER	£175
KENWOOD	TH-79E	HANDY TRANSCEIVER	£189
KENWOOD	TL-922	HF LINEAR AMP 1Kw (AS NEW!)	£899
KENWOOD	TM-231E	2M MOBILE TRANSCEIVER	£120
KENWOOD	TM-241E	2M MOBILE TRANSCEIVER	£120
KENWOOD	TM-251E	MOBILE TRANSCEIVER	£140
KENWOOD	TM-255E	2m MULTI-MODE MOBILE TRANSCEIVER	£400
KENWOOD	TM-455E	70CM MULTIMODE MOBILE TRANSCEIVER	£495
KENWOOD	TM-733	2/70 MOBILE TRANSCEIVER	£225
KENWOOD	TR-751E	2M MULTIMODE TRANSCEIVER	£350
KENWOOD	TR-851E	70CM MULTIMODE MOBILE TRANSCEIVER	£395
KENWOOD	TS-120	HF SOLID STATE MOBILE	£225
KENWOOD	TS-450S	HF TRANSCEIVER	£499
KENWOOD	TS-450SAT	HF BUILT IN ATU EXCELLENT TRANSCEIVER	£575
KENWOOD	TS-530SP	HF MAINS 100Watt TRANSCEIVER	£275
KENWOOD	TS-680	HF 6M MOBILE/BASE TRANSCEIVER	£400
KENWOOD	TS-690SAT	HF 6M Inc ATU	£650
KENWOOD	TS-711E	SM BASE STATION TRANSCEIVER	£399
KENWOOD	TS-790E	2/70CM BASE STATION TRANSCEIVER	£699
KENWOOD	TS-790E	2m / 70cm MULTIMODE BASE TRANSCEIVER	£799
KENWOOD	TS-811E	70cms MULTIMODE BASE TRANSCEIVER	£399
KENWOOD	TS-830S	HF TRANSCEIVER	£325
KENWOOD	TS-850SAT	HF TRANSCEIVER MINT!	£800
KENWOOD	TS-870SAT	HF/DSP-IF-100W BUILT IN ATU TRANSCEIVER	£999
KENWOOD	TS-950SD	HF/ 150W DSP BASE TRANSCEIVER	£1,100
KENWOOD	TSB-2000	LATEST KENWOOD - COMPUTER CONTROLED	£1,299
KENWOOD	VFO-120		£50
KENWOOD	VFO-180	EXTERNAL VFO	£75
KENWOOD	VS-1	VOICE SYTHESISER	£30
KENWOOD	VS-2	VOICE SYTHESISER	£30
KENWOOD	YG-455CN-1	270Hz CW CRYSTAL FILTER	£100
KENWOOD	YK-88A-1	AM FILTER	£40
KENWOOD	YK-88C-1	500Hz CW NARROW FILTER	£40
KENWOOD	YK-88CN1	270Hz CW FILTER 8.83MHz IF	£40
KENWOOD	YK-88S-1	2.4KHz SSB NARROW FILTER 8.83MHz IF	£40
KENWOOD	YK-88SN	1.8K SSB FILTER (TS-440 /R5000)	£40
KENWOOD	YK-88SN-1	1.8KHz SSB NARROW FILTER 8.83MHz IF	£40
KENWOOD	PS-430	POWER SUPPLY	£120
LINEAR AMP	CHALLENGER II	CHALLENGER AMPLIFIER II 2kW	£1,400
LOWE	HF-150	SW RECEIVER	£150
LOWE	HF-250	INCLUDES REMOTE CONTROL	£300
MCL	MCL1100	EASY READER	£75
MFJ	MFJ-414	MORSE CODE TRAINER	£120
MFJ	SET-UP	971-9015-4114 PORTABLE 21MHz	£299
MICROSET	PT-135	POWER SUPPLY	£80
MICROWAVE MODULES		28/144 TRANSVERTER 28/144	£125
PACCOM	TINY II	TNC	£99
PACCOM	TNC-320	TNC	£90
PLESSEY	PR-2250	HF RECEIVER BEST QUALITY CLASSIC!	£1,200
QM 70		28/144 TRANSVERTER	£100
RACAL	RACAL 1792	HF RECEIVER	£499
REALISTIC	PRO-2037	SCANNER BASE	£99
REALISTIC	PRO-394	HF RECIEVER	£99
SGC	SGC-2020	HF TRANSCEIVER	£450
SOMMERKAMP	FT290R	2m MULTI-MODE TRANSCEIVER	£180
SONY	ICF-SW77	FM/SW/MW/LW PORTABLE AS NEW!	£250
SONY	SW-100E	FM/SW/MW/LW PORTABLE	£90
ST3 HEADPHONES		DELUXE HEADPHONES	£45
SYNCRON	PS-1220VU	20 AMP POWER SUPPLY	£60
TAGRA		22AMP POWER SUPPLY	£70
TENTEC		SCOUT + MODULES	£350
TIMEWAVE	DSP-9+		£125
TOKYO HY-POWER		HL-30V 2M and 25W AMPLIFIER	£75
TOKYO HY-POWER		HL-37V LINEAR AMPLIFIER	£60
TONNA	7000E	TERMINAL	£130
TRIO	R-2000	RECEIVER + CONVERTER	£300
TRIO	TR-9130	2M ALL MODE TRANSCEIVER	£250
TRIO	TRIO 9130	2M MOBILE MULITMODE TRANSCEIVER	£250
TRIO	TS-780	DUAL BAND BASE TRANSCEIVER	£275
WELZ	AC-38M	200W MOBILE MATCHING NETWORK	£50
WELZ	SP-15M	SWR & POWER METER	£20
YAESU	FC-102	1.2KW ATU WITH 4 WAY SWITCHING UNIT	£200
YAESU	FC-20	AUTO ANTENNA TUNER FOR 847/FT100	£175
YAESU	FC-902	ATU 500W	£140
YAESU	FL-2100Z	HF AMPLIFIER	£450
YAESU	FP700	POWER SUPPLY	£100
YAESU	FP-757HD	HEAVY DUTY POWER SUPPLY	£120
YAESU	FRG-100	HF RECEIVER	£300
YAESU	FRG-7700	HF RECEIVER	£220
YAESU	FRG-8800	RECEIVER INCLUDES CONVERTER	£399
YAESU	FRT-7700	ATU MINT!	£75
YAESU	FRV-7700	UHF CONVERTER MINT!	£80
YAESU	FT-1000MK5	200W DSP HF TRANSCEIVER	£2,600
YAESU	FT-1000MP AC	HF BASE DSP TRANSCEIVER (Late serial no)	£1,550
YAESU	FT-1000MP DC	BASE TRANSCEIVER	£1,200
YAESU	FT-101ZDmk111	HF TRANSCEIVER inc FM	£375
YAESU	FT-225RD	2M BASE MULTIMODE CLASSIC!	£399
YAESU	FT-23R	HANDY TRANSCEIVER	£180
YAESU	FT-2500M	MOBILE TRANSCEIVER	£190
YAESU	FT-290RMK1	2M ALL MODE TRANSCEIVER	£180
YAESU	FT-290RMK11	MOBILE 2M MULTIMODE TRANSCEIVER	£275
YAESU	FT-411E	2M HANDY TRANSCEIVER	£99
YAESU	FT-41R	HANDY TRANSCEIVER	£120
YAESU	FT-470	2/70CM HANDY TRANSCEIVER	£140
YAESU	FT-650AC	26-50MHz 100w BASE SATATION TRANSCEIVER	£599
YAESU	FT-690MK11	6M MULTIMODE MOBILE TRANSCEIVER	£295
YAESU	FT-690RMK1	6M MULTIMODE MOBILE TRANSCEIVER	£250
YAESU	FT-690RMK11	6M PORTABLE	£375
YAESU	FT-726R	2 / 70 / HF TRANSCEIVER	£400
YAESU	FT-726R	2 / 70 / 6m TRANSCEIVER	£575
YAESU	FT-730R	70CM MOBILE TRANSCEIVER	£120
YAESU	FT-736R	2/70&23CM TRANSCEIVER	£1,050
YAESU	FT-736R	2m / 70cm TRANSCEIVER	£650
YAESU	FT-736R	2m / 70cm / 6m TRANSCEIVER	£750
YAESU	FT-7400	70cm MOBILE TRANSCEIVER	£160
YAESU	FT-747GX	HF TRANSCEIVER	£399
YAESU	FT-747GX	TRANSCEIVER	£299
YAESU	FT-757GXMK11	TRANSCEIVER MINT!	£400
YAESU	FT-757MK1GX	HF TRANSCEIVER	£375
YAESU	FT-767GX	HF BASE 100watt built-in ATU	£599
YAESU	FT-77	INCLUDES FM MINT!	£275
YAESU	FT-790R	70CM MULTIMODE MOBILE TRANSCEIVER	£225
YAESU	FT-7B	HF 50W MOBILE TRANSCEIVER	£199
YAESU	FT-80C	0-30MHz COMMERCIAL TRANSCEIVER	£375
YAESU	FT-8100	2/70cm MOBILE TRANSCEIVER	£249
YAESU	FT-811E	70CM HANDY TRANSCEIVER	£99
YAESU	FT-847	HF / 2 / 6 / 70cm BASE TRANSCEIVER	£999
YAESU	FT-900	HF TRANSCEIVER	£550
YAESU	FT-902DM	HF BASE TRANSCEIVER	£400
YAESU	FT-920AF	HF/6M BASE WITH DSP	£899
YAESU	FT-980	HF TRANSCEIVER	£495
YAESU	FT-990AC	HF BASE STATION TRANSCEIVER	£750
YAESU	FT-ONE	HF BASE TRANSCEIVER	£450
YAESU	FTV-901	TRANSVERTER Inc 2m Mod	£165
YAESU	FV-707	VFO UNIT	£99
YAESU	SP-8	LOUDSPEAKER Including Audio Filters	£100
YAESU	VFO-102	MINT CONDITION!	£199
YAESU	VR-5000	TOP RANGE SCANNER RECEIVER	£500
YAESU	VX-5R	2 / 70 / 6 HANDIE 5W	£220
YAESU	XF-114SN	2KHz SSB FILTER	£60
YAESU	YO-100	SCOPE VERY RARE!	£150
YAESU	YS-60	SWR METER 1.6 - 60MHz	£30
YUPITERU	MVT-7000	HANDY SCANNER	£99
ZETAGI	B-132	10 / 11m LINEAR AMPLIFIER, MAINS	£60

RADIO WORLD

42 BROOK LANE, GREAT WYRLEY, WALSALL, WEST MIDLANDS WS6 6BQ

E&OE

Tel sales & service: 01922 414796 Fax: 01922 417829

YAESU FT1000 MkV

200W output comes with external supply.

£2799.00

YAESU FT-847

Best selling multiband. 160-6m/100W, 2-70cm/50W, 4m/10W. All mode satellite operation. Base/mobile.

£1199.00

YAESU FT-920AF

HF and 6m base station. Built-in ATU, DSP, 100W outputs, 2 antenna sockets, large amber display. High-tech front end receiver adopted from the FT-1000MP.

£1099.00

YAESU QUADRA AMP

The amplifier adored through the industry. 1kW, solid state transmit power on HF-500W, 6m, LCD read-out. Price smash.

£3999.00

YAESU FT-8100

Dual band, cross repeat, dual read-out. Detachable front, wide band receive. Packet ready.

£299.00

YAESU VX-1R

The world has never seen a dual-band amateur hand-held transceiver which provides such an incredible small size combined with ultra-wide frequency coverage until now. Weighs just over 4 ounces. 1W output. 10hrs of operation, wide band receive.

£169.00

YAESU FT-1500M

- 50W output power
- Four power levels
- Rugged construction
- Keyboard entry from microphone
- 175 memories
- Built-in CTCSS
- Smart search
- Wide/narrow deviation select
- Packet ready

RWP **£159.00**

YAESU FT-817

The all new multi-band manpack, 5 watts, multi-mode, transceiver with lithium pack and charger, smaller than the FT-290, but can replace the whole shack!

Radioworld price **£PHONE**

YAESU FT-7100

The latest of Yaesu's pedigree dual band, dual receive 50W output.

£379.00

YAESU FT-840

HF and mobile base. An absolute joy to use. Excellent front end, 100W, 100 memories.

Easy to use. A bargain at **£569.00**

YAESU FT-100D

Yaesu's latest mobile transceiver. HF, VHF, UHF, DSP, TX, RX, built-in CW filter, TCXO & larger speaker For that tailored transmit audio derived from the FT-1000MP.

£999.00

YAESU VR-5000

HF/VHF/UHF wideband scanner built-in wave meter. Real time band scope. 0.1-2.6GHz.

Bargain at **£599.00**

YAESU VX-5R

Tri-band transmission. Short wave to microwave reception. 5W output off the lythium battery, spectrum scope, dot matrix, LCD, CTCSS, optional barometric pressure sensor.

£265.00

YAESU MB-200BX

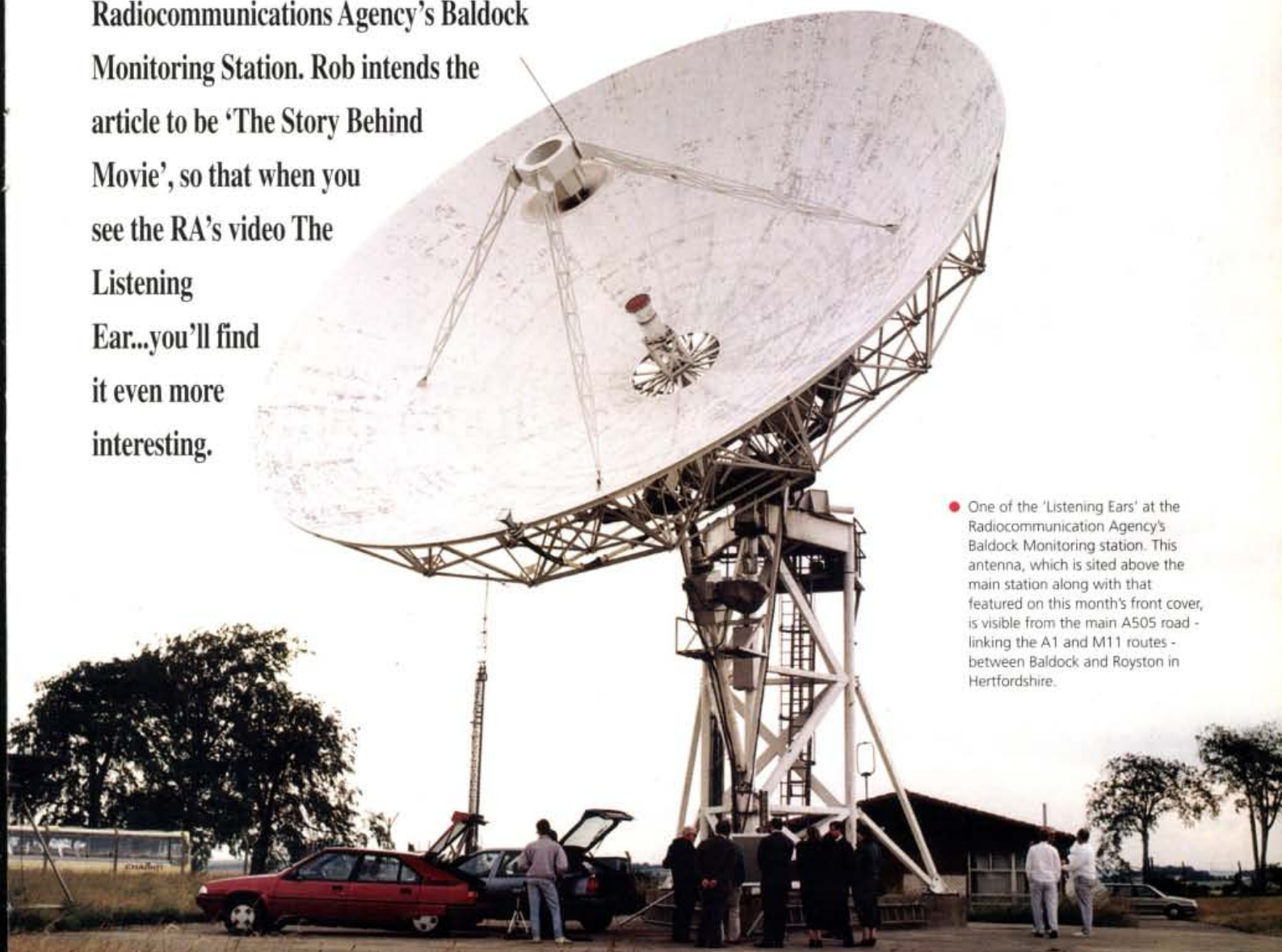
YAESU'S all new desk top microphone built for broadcast quality, large diaphragm, a must for DSP transceivers, it has the build quality and sound of Top End studio mic's,

RWP **£249.00**

IN STOCK

Inside The Listening Ear

Rob Mannion G3XFD describes his visit to the Radiocommunications Agency's Baldock Monitoring Station. Rob intends the article to be 'The Story Behind Movie', so that when you see the RA's video The Listening Ear...you'll find it even more interesting.



One of the 'Listening Ears' at the Radiocommunication Agency's Baldock Monitoring station. This antenna, which is sited above the main station along with that featured on this month's front cover, is visible from the main A505 road - linking the A1 and M11 routes - between Baldock and Royston in Hertfordshire.

On 6 February - on my way back to Dorset following an enjoyable visit to the **Bury St. Edmunds Amateur Radio Club** the previous evening - I drove to the Radiocommunication Agency's Monitoring station in North Eastern Hertfordshire, not far from the Cambridgeshire border.

Located just off the busy A505 dual carriageway road between the small market town - on Baldock itself and Royston, the RA's Monitoring Station occupies only a small part of what was originally an airfield* of around 500 acres. Despite this the station's antenna systems and other equipment make us of much of the approximately 162 acres.

Fully visible - although some distance away - from the main A505, the station is approached by its own private narrow single lane road. The winding and lonely nature of the private road could give the impression you're going nowhere but the station itself is clearly visible and it's only about a mile or so from the dual carriageway.

However, the impression of being in the 'back of beyond' is further strengthened by the 800 strong team of four-legged lawnmowers...otherwise known as sheep. Even nowadays, no more efficient (and silent, except for the occasional 'baaa') mowers can be found to keep the grass cropped...hence their traditional use amongst guy wires and masts of radio stations, literally since the earliest days of radio communications. And there are also other four legged grass eaters around - competing in a small way for the grass - as there are literally hundreds of rabbits visible even during the daylight hours. But their long furry 'listening ears' also work well - and they disappear from sight as soon as humans appear!

*This has been my impression for many years - that the site was originally a First World War grass strip airfield. However, the Baldock staff know nothing of this (and aerial photographs I have cannot prove this fact). So, if you know the history pre 1929, would be pleased to hear from you.

Radiotelephone Link

Following its yet-to-be-proved use as an airfield, in 1929 the site became a receiving location for the British end of an h.f.

Fig. 1: The RLPH steerable h.f. (6 to 30MHz) log periodic array. This antenna, although far from new is a valuable asset at the station. *(photo courtesy of the RA)*

Fig. 2: A Radio Amateur's dream antenna! A close-up view of the h.f. log periodic antenna. Formerly at the Post Office's h.f. site in North Weald in Kent, the antenna provide an extremely useful wide-band directional array.

Fig. 3: The calibrated cone antenna system, used by the monitoring station. *(photo courtesy of the RA)*

radiotelephone link from the United States of America. The transmitter site there, was at Rocky Point in New Jersey. Incidentally, the special stone commemorating this historic service is now incorporated into the modern buildings, which comprise both refurbished and totally new buildings on the original site.

In 1938 the Frequency Control Station (FCS), having moved from London Colney. In later years, during the 1950s), the FCS was amalgamated with the FMS frequency monitoring station function, previously at Brentwood in Essex. This is when it came under Post Office control and became known as RADCONTROL.

This visit, was in fact, my second to Baldock and I was surprised indeed at the careful design tricks used by the Architect to help the single storey buildings blend as much as possible into the relatively flat and peaceful landscape. They'd tried hard, and succeeded very well considering the difficult job of hiding large antennas!

The north-eastern part of Hertfordshire is relatively flat, with only slight rolling terrain to be seen. But although I was very nearly approaching Cambridge and the Fenland country...the site has the benefit of a small hill on the southern edge, where the large steerable counterbalanced parabolic satellite antenna dominates the site. This location is where other monitoring equipment is based, and it can be controlled remotely from the main site, just a short walk away (or drive for me as I was privileged to have a Range Rover 'safari' thanks to the helpful staff).

Incidentally, the satellite antenna is now quite old - and the staff tell me it has done valuable work in monitoring Ku Band satellite television. This antenna can be seen on our front cover this month. American made of course, it's of the type used for many years by the NASA organisation for tracking their earth satellites, along with the manned space missions. Because of this it's instantly recognisable, although still remarkable site parked here deep in the Hertfordshire countryside.

The large h.f. bands (6 to 30MHz) steerable log periodic antenna, **Figs. 1 & 2**, which is one of the most noticeable antennas seen from the main road - has also seen much use. It was previously employed at the old Post Office' North Weald (Kent) h.f. radio station.

As the station is approached, the surprising number of antennas on the site (some are low profile - with the wires not really visible until you're very close) becomes apparent. The Adcock direction finding array, is very prominent, as is the calibrated cone system **Fig. 3**.

Another impressive antenna is the extensive Beverage antenna, over a kilometre long! Despite its length this impressive system (there are in effect two at right angles on the site) is extremely low profile. It's the type of antenna which could catch out any unwary glider pilot looking for a convenient field as it blends into the background so effectively.

Late Arriving

Due to a very late night (thanks to the hospitality of the Bury St. Edmunds Club) I'd been late starting off from my overnight accommodation at Mildenhall (Suffolk) and because of this **Kevin Nice G7TZC**, Editor of our sister publication *Short Wave Magazine* who was also to be a guest of the RA...had already arrived. Kevin's trip to Baldock had meant a very early start from our base in Dorset.

Once I'd passed through the extremely modern high security gates, I was welcomed by the staff. Incidentally, the security system - controlled remotely and backed by truly efficient Closed Circuit Television cameras, none of the fuzzy pictures you see from the average security camera on BBC TV's *Crimewatch* programme...**this stuff is so good** the staff inside the station can check to see how busy the main road into Baldock is, and zoom in on all the wildlife if they had time to do so! Indeed, I was able to almost see inside the driver's cab of a train on it's way from London to East Anglia!

Once inside myself, I too was welcomed by the staff working in the main monitoring/control room (**Fig. 4**), some of whom I'd met on my previous visit more than eight years before. However, this time even the older parts of the building had lost their faint smell of old fashioned brown linoleum - so familiar to anyone who has ever worked or visited Government/Service radio stations, etc., and polish, and gone too was the warm smell of valved gear - the last thermionic equipment having been retired some time ago. The whole place looked and felt extremely professional and efficient with some truly wonderful test equipment.

Kevin and I were most impressed...especially looking at a new totally solid state spectrum analyser...no cathode ray tube (c.r.t.) in use on this instrument in the main control room...it had a full colour liquid crystal type display and covered to well up into the GHz range. Unfortunately though...we weren't able to remove it for our own use!

What Goes On?

As I've already made clear in the introduction to this article, the main idea is to encourage you (or your Amateur Radio Club) to 'see the movie'. This is actually a 20 minute video programme entitled *The Listening Ear* which was first mentioned in the April issue of *PW*, along with details on how loan copies can be obtained. Extremely unusual, and produced by a well-informed

Fig. 7: During investigations 'in the field' each mobile laboratory is assisted by a support vehicle -itself fully equipped for radio investigations. *(photo courtesy of the RA)*

Fig. 4: View of the main control room during a day shift. The Baldock station operates 24 hours a day, seven days a week throughout the year. It played a very important part during the 11 September terrorist attacks on the New York World Trade Centre's twin tower by Muslims in 2001, when the Transatlantic Aeronautical h.f. services were disrupted by interference (see text). *(photo courtesy of the RA)*

Fig. 5: Close-up view of one of the main monitoring positions at Baldock. Accurate logging of interfering transmission is essential for the work done on behalf of many services. A proportion of the work at Baldock is carried out on behalf of Shanwick Radio - the h.f. aeronautical transatlantic service for aircraft flying between Europe and North America.

Fig. 6: One of the three mobile laboratories used for investigations 'In the filed'. Each vehicles is equipped with a 10m telescopic pneumatic mast. *(photo courtesy of the RA)*

team (the main driving force behind the video was one of the RA's senior Engineers, so avoiding the usual 'corporate video' slant) it provides compulsive viewing. Don't miss it!

So, what actually goes on at Baldock...what do they do on the site? Put simply the answer is - they monitor frequencies from l.f. to microwaves, mainly to provide protection for authorised services where interference, non-authorised use is, or has the capability of disrupting services.

During our visit Kevin and I were told of the work that goes on to keep the transatlantic h.f. aeronautical service free from interference and mis-use. In particularly, following the horrendous act of terrorism on the twin towers of the World Trade Centre in New York on 11 September 2001 by Muslim Terrorists, Baldock was very much involved in supporting the efforts to keep the h.f. frequencies clear and usable.

The aftermath of the Muslim attacks on New York led to the immediate and unprecedented closure of American airspace. The potential for airborne chaos can be imagined, and the h.f. service - necessary to fill the gap in v.h.f. communications over the Atlantic, immediately had problems.

I've since learned that the problems weren't caused by the professional aircraft crews (their crisp operating procedures have to be heard to be fully appreciated but by marine operators from ships! And although they RA's spokesman was a little cagey about the type of interference caused...he did tell me it was from certain marine transmitters... "Wandering off frequency". Whether or not this was a case of the traditional inquisitive 'Fish Phone' operator tuning up to frequencies unavailable to them...find out what was happening in New York...it sounds very much a possibility to me!

Video Viewing Available

Loan copies of the RA's 20 minute-long video *The Listening Ear* are available free from the address below. Please note that there are only **a limited number of the videos available**, and it's a case of 'first come first served'. Please also remember to return the cassette to the RA as soon as you've finished with it. Someone else could be waiting! Requests for the loan should be addressed to:

Mary McParland, Radiocommunications Agency, Wyndham House, 198 Marsh Wall, London E14 9SX. Tel: 0207-211-0483.

Much of the RA's 'Policing' work is done by teams of Engineers based in the regions (this is a main feature in the video). The RA's fleet of three mobile laboratories (**Figs. 6, 7, 8 & 9** are staffed and operated from Baldock by the filed teams who support the regional staff. These comprehensively equipped vehicles are able to travel to the area where complex interference cases, microwave measurements and where UKAS accredited calibrated measurements to standards are require. Provided with a support vehicle, they are then available 24 hours a day if necessary.

Another troublesome - for those who live in large cities - area in which Baldock has some part to play (although much work to eradicate this problem is done regionally) is the ever-growing nuisance of Band II v.h.f. f.m. broadcast 'pirates'. Far from being the swashbuckling buccaneers which the name might suggest, the many illegal radio stations often disrupt legitimate broadcast service and deprive listeners of the entertainment they require. And to be honest, you have to hear the cacophony of the multiple illegal stations there are in the big cities to appreciate the problem.

Although the Baldock staff - with good reason - aren't able to divulge too much on this aspect, it's an on-going job. And along with the monitoring of the 'pseudo-Amateur Radio operators transmitting between 6.6 and 6.8MHz, who cause interference to legitimate users on the same frequencies. These and the many other nuisance/illegal operations will always keep the Radiocommunications Agency's 'Listening Ear' busy.

It was a fascinating visit and I thank everyone at Baldock for their enthusiastic welcome, and for providing an insight into their valuable work. And don't forget...that you too can get an overview of their essential service by watching their video *The Listening Ear*. PW

Fig. 8: Inside one of the comprehensively equipped mobile labs. The monitoring equipment can be powered from an externally mounted generator or batteries. The ability to monitor waveforms and identify interference sources is paramount and the equipment is truly state-of-the art. *(photo courtesy of the RA)*

Fig. 9: Everything's included...even the kitchen sink (Yes...and there's also a small microwave oven inside for the essential snacks and hot tea!) for the long hours when monitoring/investigation problems away from the Baldock base.

Foundation Debat

Following the heated debate on the introduction of the Foundation Licence in *P W*'s letters pages section, and in an att both with strongly held opinions...from opposite viewpoints. Both authors have the same space - a page. As with the sp 'Against' argument following on the opposite page. Editor.

For The Foundation Licence

Roy Walker G0TAK, presents his opinion on the introduction of the Foundation Licence.

There has been a lot of discussion in the Radio related Press, and among Radio Amateurs, regarding the revision of the licensing structure for Amateur Radio at the beginning of 2000.

As with the 'Great Debate' about the revision of the Morse code requirement there have been those among us who were vehemently 'For' - or 'Against' the proposed changes. Both viewpoints have, I think, been very fairly reported.

Although the Radiocommunications Agency (RA) and the Radio Society of Great Britain (RSGB) have been working very hard, in close co-operation on the restructuring, I doubt they have yet got it quite right. I'm sure they would be prepared to admit that. As yet the conditions imposed on the Foundation Licence do not sit entirely comfortably below the Intermediate Licence conditions, and they in turn do not follow on smoothly into the Full Licence. (If you want to check up on it for yourself obtain a copy of each of the BRN68 publications from the RA's Library).

Enough Incentive?

I wonder whether there is enough incentive to pass from one licence to the other? Or are the Amateurs of the future going to become 'stuck' at one stage or another (very much like the 'B' Class Licensee who was unable, or unprepared to tackle the Morse at 12 words per minute (w.p.m.)?

Expect some 'tinkering' with the regulations over the next couple of years! Having said that, **I'm unreservedly in favour of the Foundation Licence scheme** as it presently stands, for a number of reasons.

We must all accept that the Morse requirement will eventually disappear although, contrary to many reports, Morse code is not yet dead, indeed it seems to be flourishing on the bands.

Several eminent and experienced Amateurs have expressed the opinion that the Morse test ought to be replaced by "something else". Some sort of operating test has been suggested, or a higher grade of technical skill. But it does not require higher technical skills, or indeed a formalised operating examination to be a good Amateur Radio operator.

Few, if any, existing Amateur operators have had any formal training in operating, other than those who have had Military or Commercial experience. What's required is a basic course of instruction in topics such as Licensing requirements, safety issues, non-interference with other services, coupled with 'On the Air' experience to gain confidence, together with a good standard of operating from already established Amateurs which will 'rub off' on the newcomers.

The Foundation Licence course goes a long way down the road of providing the requirements mentioned already. **It is after all a 'Foundation' licence**, a 'get you started' pack, and is not intended to replace the whole of the existing Licence structure.

Voluntary Instructor

For the last five years I have been involved with the Air Training Corps. (ATC) as a voluntary civilian instructor, specialising in communications. One of the options for a cadet obtaining seeking his or her ATC Communicator's Badge is a recognised Amateur Radio qualification.

I emphasise that it is **only one of the options**, there are others including v.h.f./u.h.f. operating (in a stripped down form of standard Military procedures), h.f. operating, data communications and listening.

● Roy Walker G0TAK

The Novice Licence course, (as it then was), is incorporated in the ATC training manuals and a number of cadets have been successfully passed through and have their licences.

The Foundation Licence courses, when they are up and running in the ATC, will be much more immediate and accessible. They'll be just as relevant to the Cadets, who will until that time know little or nothing about radio and even radio as a hobby.

More importantly the Cadets will be able to get on to the air very quickly, improve their operating skills, become confident and competent operators, **and hopefully have some fun**. Yes, they will need **some supervision and guidance**, but...didn't we all when we were first licensed? What a great opportunity!

(Incidentally the Amateur Radio Licence is also a recognised 'skill' for the Duke of Edinburgh Award scheme).

Whole New Spectrum

The ability to open the hobby to a whole new spectrum of people - both young and older - is one too great an opportunity to miss. For too long our hobby has been declining in numbers and in danger of becoming a preserve for the older generation.

We've been sitting around collectively scratching our heads, wondering how we could get new blood into the hobby, and to refresh and renew the interest of those already licensed. What a heaven-sent opportunity the Foundation Licence scheme will prove to be!

And before you ask...yes I have applied to be a Foundation Licence Lead Instructor, (I have been a Novice instructor for some time), and I hope to instil in my Cadets my own wonder and amazement at what can be achieved with radio.

I'm told that up to date there have been over 1000 Foundation licences issued, of which about 400 were people who had never been licensed before, i.e. not re-graded 'B' class licensees. The numbers are growing and it seems I'm not the only one keen on the idea.

Finally, no-one will be able to 'Police' the 10W power limit, any more than they can the QRP limit, 400W limit, or any other. At the end of the day it's down to trust. *PW*

● Howard Aspinall G3RXH

empt to provide balanced coverage the Editor has invited two authors,
oken word...it seems natural to lead off with the 'For' argument...with the

Against The Foundation Licence

Howard Aspinall G3RXH, the second of our selected authors, provides his own opinions 'Against' the institution of the Foundation Licence.

Traditionally, as we know, Amateur Radio was "For the purpose of self-training in communication by radio telecommunications.... including technical investigations..." the words of the Radiocommunication Agency booklet BR68. But, how many people really do much self-training today, and how many of us actually undertake technical investigation?

Most on-air traffic is non-technical chat often amongst friends using ready-made gear. Apart from minority interest groups like QRP, low frequency operations, vintage, microwaves, etc., where practical skills remain important, and for contestants and certificate hunters, Amateur Radio is mainly for fun and personal communication only.

Thinking about it, for most people, despite once passing exams, etc., Amateur Radio has now become little more than 'up market' (cost of gear) Citizens' Band (CB). Recent licence changes are geared to keeping it that way, by ensuring use of commercial gear becomes almost inevitable.

Established licensees are still free to build/use their own gear; almost doing as they want, but newcomers no longer have that freedom. **Why is this so? And does it matter?**

Most Amateurs today operate imported 'Black Boxes', tempted by glossy magazine adverts, whilst in comparison, marketing of d.i.y. is confined to low-key efforts by specialist magazine columnists and suppliers. Typical beginners know little about special interests.

No Contest

So, there's no contest! they can't avoid the lure of 'cheque book radio' with its hi-tech gadgetry. They might glance fleetingly at apparently dull d.i.y. which requires time and effort, the result appearing inferior, but the choice is obvious....'Black Boxes' rule supreme! Marketed as 'fun', Amateur Radio is really no longer the intelligent technical pastime envisaged by BR68. **So what?**

Lots of older callsigns dating from when building-it-yourself was commonplace, are still regularly heard on air. Their practical skills and experiences equip them to engage long term in chosen interests and for 'rag-chewing', the time-honoured method of demonstrating common bonds of interest making Amateur Radio what it once was.

Conversely, from 1980 when using 'commercial' was the in thing, huge numbers of licensees disappeared within months of getting their tickets through boredom, lack of direction or motivation. Only the continuing supply of 'new blood' from CB kept the bands busy then...but not anymore.

If the phenomenon of the 1980/90s remains unchanged and unchecked, the interest of many future newcomers will also rapidly die. Hobbyists now need encouragement to develop special interests or involvement, the key being acquisition of practical skills and experience. So, how can this be achieved?

Elementary & Broad Based

Foundation courses usually provide elementary, broad-based information so Students can choose their future preferences. They learn sufficient to choose what's for them and what isn't.

Does our foundation scheme enable beginners to make informed decisions? They can use virtually all bands, modes, and equipment **except home-made** (unless built from kits) projects.

The scope seems huge. Most hobbyists instinctively stick with what's familiar, so in reality choice is limited to what they know about.

In the past short wave listening (s.w.l.) 'apprenticeships' once demonstrated enormous scope within Amateur Radio. But without them, with foundation courses and magazine adverts emphasising Amateurs talking into 'black boxes', most beginners really have little option.... commercial gear it must be. The CB route starts here!

With learning to swim, ride a bicycle or play an instrument, people sometimes need a push to get them going. Without it they might never know what they're missing.

The same principle applies to radio home-construction. There's no push in this direction from the Foundation Licence scheme.

Specialised radio emporiums will only remain open if there are sufficient customers. Smaller markets mean reduced takings and the 1980s CB led boom has gone for good. Aren't we 'burying our heads in sand' when assuming future supplies of inexpensive imported gear will never end?

Despite a useful syllabus, the current Foundation Licence scheme will perpetuate up market' CB radio, concentrating on 'black box' use. It also fails to inform hobbyists, about or to encourage 'home-brewing' equipment.

No Advice

There's no advice or encouragement for the new M3s. Despite future uncertainties, it helps Foreign manufacturers at the expense of UK component and kit suppliers. Is this the right way? **Foundation Licensing needs changing to positively encourage all beginners to construct their own gear.**

The M3s could gain experience with operating procedure on v.h.f./u.h.f. using ready-made equipment, but before going on h.f., they should have to build their own simple transmitting equipment (probably from suitable kits) with experienced help and supervision, possibly in small groups. Then, they'd gain experience using it before being eligible to progress up the Licensing ladder.

The M3s would also benefit from learning, make social contacts, have fun, start acquiring technical/practical know-how, be better equipped to make informed choices on preferred future direction. This is what the RA wants for youngsters as a precursor to training as tomorrow's Engineers.

Doubters might argue my suggestion is too difficult to achieve, and the hurdles offering real challenges must go. And because modern education trends mean learning less, yet being given more, entry standards should follow suit. I disagree!

We should opt for quality not dumbing down. Employers once valued the Amateur Radio Licence as a technical and practical qualification...in the right situation they might do so again. Don't forget, CB collapsed when talking became easier using newer technology.

People say Amateur Radio will also collapse for similar reasons...Internet and mobile telephones, etc. Surely then for survival, even future success, Amateur Radio must be quite different from yesterday's failed CB?

If beginners continue being pushed down the commercial / CB route, that will contribute to our hobby's eventual collapse? The current Foundation Licence scheme puts helping foreign manufacturers first, whilst providing no proper facility for informing, motivating or educating budding enthusiasts. If there's the will, these shortcomings can easily be remedied. PW

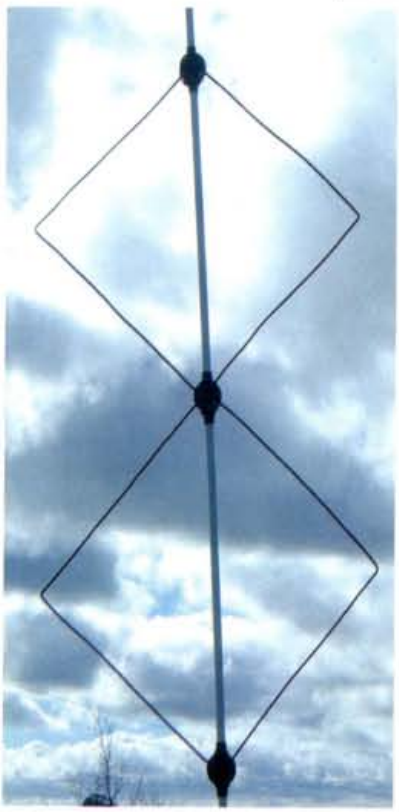
Antenna Workshop

The Twin-Quad Antenna

David Butler G4ASR looks at a Twin-Quad antenna...also sometimes known as a 'Bowtie antenna'.

Many readers will be familiar with the term 'quad' when applied to antennas, but here's a variation that you may not have seen before. The twin-quad antenna represents a variation using two parallel stacked quad antennas. The stacking effect significantly reduces the vertical beamwidth, resulting in an additional forward gain of about 2.5dBd. (*See the article 'Funny Things dBs' in this issue* Editor)

The twin-quad antenna is a proven antenna with a reasonable amount of forward gain and a low v.s.w.r. across the band. Depending on its application the broad horizontal radiation pattern may be regarded as having advantages over a Yagi-Uda antenna. There are no trimmer capacitors to adjust and it may be used directly with either 50 or 75Ω coaxial feeder cable. A simple illustration is shown in **Fig. 1.**



The twin-quad antenna is easily set up for either horizontal or vertical polarisation and it can handle high power. It uses simple construction techniques and has a compact design. It also has an excellent relationship between performance and cost that's also an advantage...what more can you ask for?

Twin Radiator

The twin-quad radiating element can be made from 5mm diameter wire or tube, using either copper or aluminium. I actually made one of my versions from surplus Andrews LDF2-50 Heliax (semi-rigid coaxial cable) as this cable has a solid copper outer conductor. Each side of the quad measures one quarter-wavelength at the operating frequency band, making the entire twin-element element two wavelengths long.

After the element has been bent to shape the two ends are joined, either by soldering or bolting together. The dimensions given in **Table 1** are for antennas for the 144, 430 and 1296MHz bands.

The radiator element is held at the two points by insulated supports mounted on the boom. The supports are made from plastic material and need not have high insulation values since the fixing is at a low voltage point. I used heavy duty 25mm pvc round conduit for the support boom with 25mm plastic junction boxes to fix the twin-element in place as shown in the heading photograph.

Table 1

Band (MHz)	Radiator Side(mm)	Total (mm)	Reflector (mm)	Spaced (mm)
144	520	4160	(see text)	275
430	170	1360	550×550	100
1296	60	480	250×250	30

Added Reflector

To provide additional forward gain, reflector elements may be fitted behind the twin-quad radiator. This increases the gain to around 10dBd making the antenna comparable to an 8-element Yagi. To reduce wind loading the reflector for the 144MHz version consists of three rod elements as shown in the illustration **Fig. 2**.

The rods have a length of 550mm each and spaced 275mm behind the plane of the twin-quad element. The outer reflector rods are 510mm apart from the centre reflector element.

In the 430MHz and 1.3GHz versions the reflector may be made from a solid sheet of copper printed circuit board (p.c.b.) or fine mesh coated with protective varnish. The radiator-to-reflector spacing is slightly more critical for these u.h.f. versions and the diagram **Fig. 3** shows one method of adjustment.

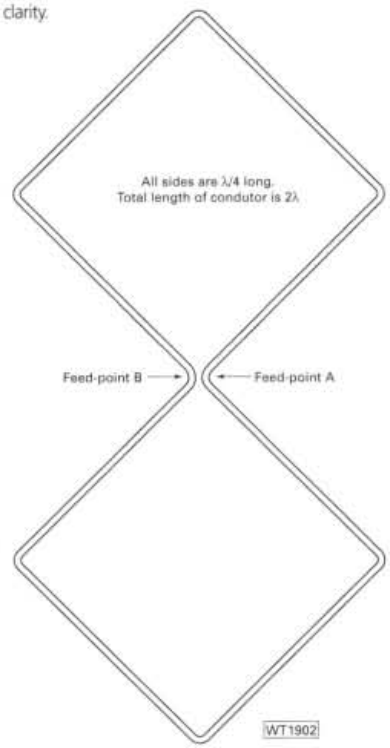
Feeder Possibilities

Now to mention feeder possibilities. The coaxial feeder cable is joined to the quad as shown in the diagram **Fig. 4**. The feed-point impedance is approximately 60Ω, but balanced. It's possible to connect the coaxial cable directly to the twin-loop without to much in the way of losses. The only effect is to shift the radiation pattern 10° or so away from the main axis.

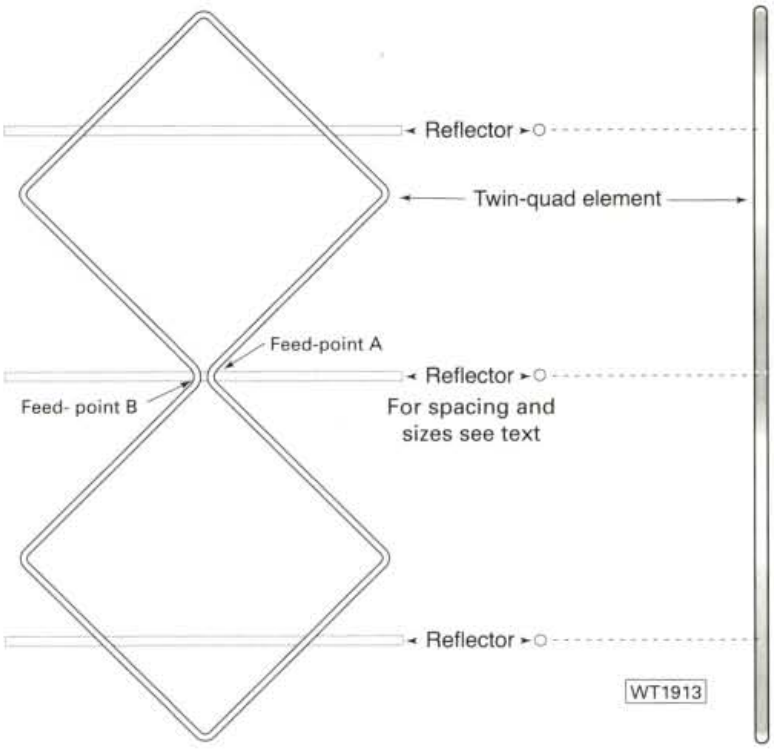
The direction of shift is dependent on the connection of the inner and outer connections. You may consider the 'squint' inconsequential as the beamwidth of the twin-quad element is about 70° so, you probably won't notice any significant change.

Although you don't really need a balanced feed for the twin-quad, the diagram shows how to provide a

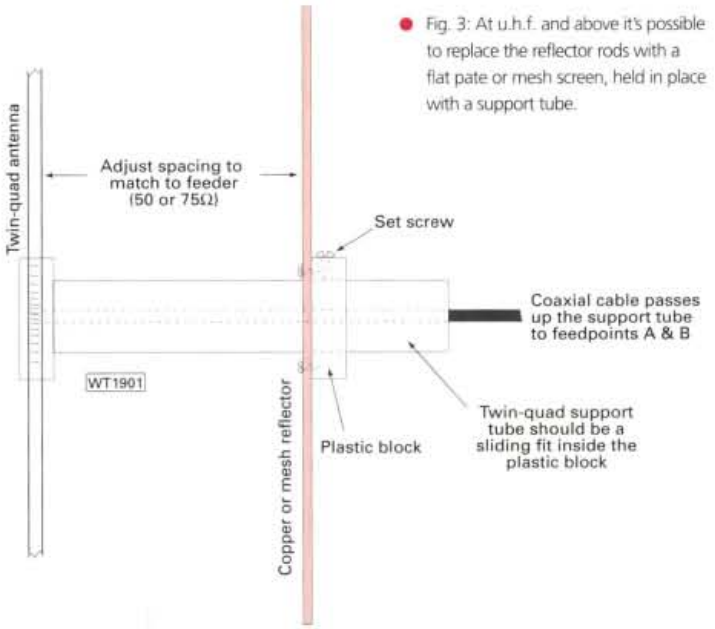
● Fig. 1: The twin-quad radiating element shown in the horizontal polarisation position. The mounting points made from plastic conduit boxes are not shown for clarity.

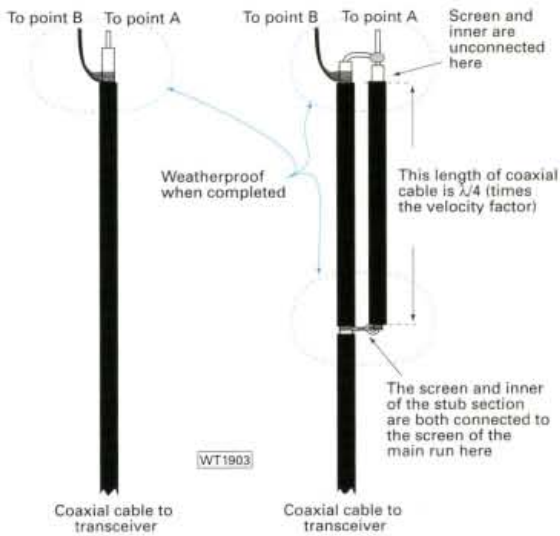


● Fig. 2: Adding the three reflector rods to the 144MHz version. They are spaced at 275mm behind the twin-quad. (See text for more detail.).



● Fig. 3: At u.h.f. and above it's possible to replace the reflector rods with a flat pate or mesh screen, held in place with a support tube.





● Fig. 4: Two feed arrangements. The balanced version shown to the right is the better one to use. (See text for more detail.).

● Fig. 5: Close-up shot of the unbalanced feed connected to the 144MHz antenna.

balanced feed stub match using coaxial cable. This technique may come in useful if you need to feed other types of balanced antennas. The λ/4 line balun should be cut from the same cable material that you are using for the main feeder.

The screening braid **is unconnected at the antenna end of the stub**. The insulating sleeves should remain on both cables. The spacing between the main feeder and the λ/4 section is shown for clarity only and can be in close contact. After making the balancing section you should seal the ends of the assembly with self-amalgamating tape or other sealant.

Initial Adjustments

The impedance of the twin-quad is around 60Ω, a reasonable match to either 50 or 75Ω coaxial cable. The twin-quad with reflector may require a small adjustment to achieve a low v.s.w.r. but I didn't find this necessary in practice.

Horizontal polarisation is achieved by mounting the twin-quads in the vertical plane as shown in the illustrations on these pages. Simply rotate the twin-quad by 90° if you wish to use the antenna for vertical polarisation.

PW

ML&S martin lynch & sons

Suppliers of Communications Equipment

Have a trade in? We PAY TOP MONEY call the sales desk or EMAIL your request to sales@hamradio.co.uk

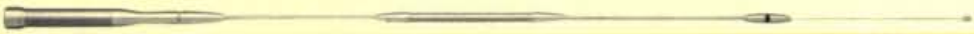
ML&S *are proud to be the* UK distributor *for* Hokushin Industries *range of products.*

For many years **Hokushin** have manufactured trend setting mobile antennas of the finest quality. All the antennas featured are the conventional M mount that has become the industry standard. The VHF/UHF selection are slender profile with foldover on most models while the HF range are sturdy and durable offering excellent mobile performance.

Maldol *Here are some examples of there excellent range of* **Maldol Antennas:**

Apex Range

AX-40 144/430MHz — £24.95
• TYPE 1/4λ, 144MHz, 1/2λ, 430MHz • GAIN 3.0dBi 430MHz • MAX POWER INPUT 60W • CONN. M-P • LENGTH 425mm • WEIGHT 110g



AX-75 144/430MHz — £33.95
• TYPE 1/2λ, 144MHz, 5/8λ, 430MHz • GAIN 3.2dBi 144MHz, 5.7dBi 430MHz, • MAX POWER INPUT 60W • CONN. M-P • LENGTH 760mm • WEIGHT 140g

AX-95 144/430MHz — £32.95
• TYPE 1/2λ, 144MHz, 5/8λ, 430MHz • GAIN 3.3dBi 144MHz, 5.8dBi 430MHz, • MAX POWER INPUT 60W • CONN. M-P • LENGTH 950mm • WEIGHT 150g

AX-110 144/430MHz — £34.95
• TYPE 1/2λ, 144MHz, 5/8λ, 430MHz • GAIN 3.5dBi 144MHz, 6.0dBi 430MHz, • MAX POWER INPUT 70W • CONN. M-P • LENGTH 1100mm • WEIGHT 150g

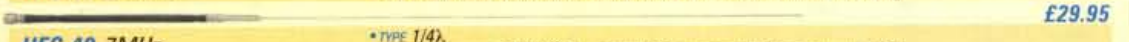
HFC Range

HMC-6S 7/21/28/50/144/430MHz — £79.95
• TYPE 1/4λ, 7/21/28/50MHz, 1/2λ, 144MHz, 5/8λ, 430MHz • GAIN 3.5dBi 144MHz, 6.0dBi 430MHz, • MAX POWER INPUT 120W 7/21/28, 150W 50/144/430MHz • CONN. M-P • LENGTH 1800mm • WEIGHT 800g

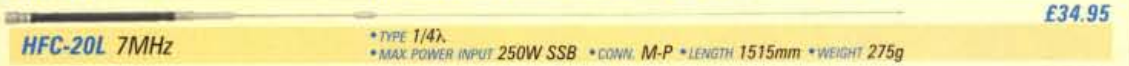
HFC-80L 3.5MHz — £44.95
• TYPE 1/4λ, • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 2110mm • WEIGHT 530g

HFC-80 3.5MHz — £38.95
• TYPE 1/4λ, • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1540mm • WEIGHT 360g

HFC-40L 7MHz — £34.95
• TYPE 1/4λ, • MAX POWER INPUT 200W SSB • CONN. M-P • LENGTH 1870mm • WEIGHT 330g



HFC-40 7MHz — £29.95
• TYPE 1/4λ, • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1310mm • WEIGHT 210g



HFC-20L 7MHz — £34.95
• TYPE 1/4λ, • MAX POWER INPUT 250W SSB • CONN. M-P • LENGTH 1515mm • WEIGHT 275g

HFC-20 14MHz — £29.95
• TYPE 1/4λ, • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1010mm • WEIGHT 190g

HFC-15L 21MHz — £34.95
• TYPE 1/4λ, • MAX POWER INPUT 250W SSB • CONN. M-P • LENGTH 1515mm • WEIGHT 250g

HFC-15 21MHz — £29.95
• TYPE 1/4λ, • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1010mm • WEIGHT 190g

HFC-10L 28MHz — £34.95
• TYPE 1/4λ, • MAX POWER INPUT 250W SSB • CONN. M-P • LENGTH 1515mm • WEIGHT 245g

HFC-10 28MHz — £29.95
• TYPE 1/4λ, • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1010mm • WEIGHT 190g

We also have a range of mounts that have not been available before, mounts include
• Window Mount • Roof Rail Mount • Various boot and Hatch mounts.

***Call the sales team for the* Hokushin Catalogue *on* 02085661120**

ML&S CD ROM Catalogue will be available in the next few months! *CALL TO ORDER YOUR COPY* **Order Yours TODAY**

What's NEW for Summer!

FT1000 Mark V Field

A 100W all-in-one HF Transceiver with built-in power supply and auto antenna tuner.

- High Efficiency Cooling system
- Conservative 100 Watt Low Distortion Final Amplifier Design
- High Speed Automatic Antenna Tuning System
- Dual Receive With Independent AGC Systems
- Enhanced Digital Signal Processing
- Selectable SSB Pattern Contour Filters
- Industry-Leading RF Front End Design
- 3 RF Preamp Modes+ IPO (Direct Mixer Feed)
- Outstanding IF Filter Chain
- Full Breaking CW and Electronic Keyer
- Multifunction Display with Improved Contrast
- Enhanced Shuttle Jog Tuning Dial
- Direct Keypad Frequency Entry
- Twin Stacked VFO Registers
- Easy Digital Mode Interfacing
- *And MORE.....*

ML&S £2295
0% deposit NOTHING to pay for 6 months then pay in full interest free or
36 * £99.64

IC-756 Pro Mk2

True DSP has arrived! - with a full feature HF & 50MHz Dual Receive transceiver!

- Improved receiver
- Selectable filter shape
- Digital Voice record/playback
- Enhanced SSB data mode performance
- SSB & CW synchronous shift
- and lots more

ML&S £2495
0% deposit NOTHING to pay for 6 months then pay in full interest free or
36 * £108.32

IC-7400

With 32 bit DSP and 100 Watts on HF/50MHz and 144MHz plus a built in ATU this radio offers performance at a value for money price. Only **£1499**

MORSE TESTS at Martin Lynch & Sons

ML&S provide the facility for Morse tests ON DEMAND on the morning of the last Saturday of every month *(except December)*. We offer the **5 WORD per MINUTE MORSE TEST** and the **Foundation Morse Assessment**. This is a unique opportunity to take your morse test in a relaxed environment.

Any questions call **CHRIS TAYLOR** *on* **0208 566 1120** *or email:* **morse@hamradio.co.uk**

BEST PRICES at ML&S - *where else!*

Funny Things, Decibels

Gerald Stancey G3MCK

explains the term decibels, and takes a look at what they mean to the average Radio Amateur.

Funny thing these decibels aren't they? So let's take a closer look at them. The standard text-book definition of the term decibel (dB) is given as:

$$dB = 10\log\left(\frac{P1}{P2}\right)$$

where the two terms P1 and P2 are two power levels. Please note that the term is written correctly as 'dB', not 'DB', db' or 'Db'. And that's the schoolmasterly bit over!

The first thing to notice is that we are looking at a power ratio. **This means that when we use the term dB, it must be referred to something**, you cannot just say that a sound or signal is 'so many dB'. **You must say 'so many dB relative to some defined standard.**

An example of **how to not to** use the term dB is - 'this antenna has a gain of 7dB'. But it's a pretty useless piece of information as it stands, unless you say what it's 7dB relative to!

In fact antenna gains are usually quoted relative to a dipole, or an isotropic source.

As a dipole (broadside on) has a gain figure of a little over 2dBi (with reference to an isotropic source), then it's well worth knowing which reference was used when comparing gain figure for your next antenna.

Power (W)	Gain (dB)	Increase (W)	dB/Watt
1	-	-	-
2	3	1	3.0
4	3	2	1.5
8	3	4	0.75
16	3	8	0.37
32	3	16	0.18

Table 1: A few watts increase will benefit a low power station far more than the same power increase for a higher power one. See text for more details.

Gain Figure

In the case of an antenna's gain figure there are two standard references that may be used. The most commonly accepted reference is an antenna's gain when referred to a dipole for the same frequency. In this case the term should be correctly written as 'dBd' to show that a dipole has been used as the reference power (P2 in the formula).

Another reference that is used when dealing with antenna gains is to use the radiation level of an Isotropic Radiator. **This is a purely theoretical radiating source, that doesn't exist in the real world in which we live.** When this is the reference then the term is written as 'dBi'.

As an isotropic radiator, pushes power in all directions equally so, no matter where you are in 3D space, you see it as an unchanging signal. A dipole though, radiates little signal in the direction of the two elements. So, as you move around the antenna, the signal seems to climb to a maximum, then fall to a minimum (theoretically it falls to nothing).

All Directions

Because the dipole doesn't radiate in all directions, we can say that it has a gain of a little over two (2.16) 'dBi' broadside to the run of the elements. So an antenna shown as having a forward gain of 7dBi can also be said to be around 5dBd. Worth bearing in mind when looking at antenna specifications.

An interesting item comes to light when quoting power levels in dB, is that increasing power levels brings diminishing returns. To see what I mean look at Table 1 when I've shown a few power levels.

The figures in Table 1 show that each time we double the power level (3dB increase), the cost of getting this increase increases. So, it is easier for a low power station to improve his signal strength, than for a higher power station to gain the same relative increase.

The crunch question is what is each dB gain worth, in terms of making a signal stronger? Peoples' hearing varies enormously, but the general consensus from audio engineering books is:

- A just detectable increase is 1-3dB
- An easily detectable increase is 3dB
- A doubling in perceived sound level is 6dB
- A most noticeable improvement in perceived sound level is 10dB

So, a 3dB increase is the very minimum that is of distinct value, and a 6dB increase is the real minimum to aim for.

Current & Voltage

When using either voltage or current levels to work out a dB figure, then we must use a slightly different formula, and there is a constraint placed on how it may be applied. To use either voltage or current ratios to calculate gains or losses, the resistance of the circuits involved must be the same for both measurements.

If you use voltage levels across (or currents through) a loading resistance and that load resistance does not change for both measurements then use:

$$dB = 20\log\left(\frac{V1}{V2}\right) \quad or$$

$$dB = 20\log\left(\frac{I1}{I2}\right)$$

So if you are monitoring the output voltage level across a 50Ω load resistance, it's perfectly okay to use the relative voltage levels to work out the relative power gain (or loss) in dBV. The letter V being added to show that readings were taken using a voltage comparative method.

And if you have a current meter in an output circuit into a fixed load then you could give relative output power in dBmA (or dBA) again the addition letters signify the units and method used.

Test Conducted

Tests conducted with carefully selected subjects (my wife and myself) showed that neither of us could detect a 1dB change in audio level. Both of us though, could detect a 3dB change, while I found a 2dB change indeterminate (unlike my wife).

If you are working on leading-edge techniques of very low signal strengths (such as Moonbounce) then trying for improvements, each of which is only a fraction of a dB, may bring useful results, when added up. But for the majority of Amateur applications, seeking gains, or trying to reduce losses, of less than 2dB, may not bring useful returns in terms of effort. In fact it may be a waste of time!

PW

www.nevada.co.uk

Nevada®

023 9231

more thar

• Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • PO6 1TT • e-mail: info@nevada.co.uk • we

...ORDER ONLINE...ORDER BY PHONE...ORDER BY FAX...ORDER BY POST...OR COME F

NEW!

COMPUTER OPTIMISED, ULTRA LIGHTWEIGHT, EXTRA STRONG ANTENNAS

TRIDENT

LP 1830 5 Element Log Periodic 18-30 MHz

GAIN (TYP) 7.8 DBI | LONGEST ELEM. 28.6 FT | BOOM 3 MTRS | WEIGHT 16 KG | POWER 2 KW | PRICE £399 P&P £10

		GAIN (dBi)	BOOM (Metres)	PRICE
2 Metre Yagis				
2M5L	2 Metre 5 element	12.31	2.5	£85.00
2M7L	2 Metre 7 element	14.19	4.4	£99.95
6 Metre Yagis				
6ML	50 MHz 3 element	8.21	1.9	£85.95
6M5L	50 MHz 5 element	10.31	3.6	£119.95
6M5LDX	50 MHz 5 el. Long Yagi	11.75	6.0	£165.95
6M7LDX	50 MHz 7 el. Long Yagi	13.31	9.6	£249.95
TR 6-5	50 Mhz 5 el. economy	10.2	3.6	£99.95
4 Metre Yagi				
4M3L	70MHz 3 element	8.7	1.48	£85.00
28MHz Yagis				
10M3L	28Mhz 3 element	7.41	3.0	£129.95
10M4LDX	28MHz 4 el. Long Yagi	9.42	5.4	£189.95
18MHz Yagis				
18M2L	18 MHz 2 element			TBA
18M3L	18 MHz 3 element			TBA
14MHz Yagis				
20M2I	14 MHz 2 element	6.37	3.0	£179.95
Log Periodic Yagis				
LP270	144 - 440 MHz	9.5	2.7	£110.00
LP1300	105 - 1300 MHz	11-13		£129.00
LP 1830	18 - 30 MHz	7.8	3.0	£399.00
Verticals				
V4M	70MHz 1/2 Wave Vert	2.2	2.35	£59.95
V6M	50MHz 1/2 Wave Vert	2.2	3.75	£59.95
TA2M258	144MHz 2 x 5/8 Colinear	8.5	3.2	£69.95
Baluns				
CB 18-52	18 - 52 Mhz 50 Ohm Yagi Choke Balun			£12.95

visit www.tridentantennas.co.uk for full details

FORCE 12 YAGI			
N1217	12/17 Mtrs Dual band beam	~~£599.00~~	£479.00
SIRIO 28MHz Beams			
SY27-3	3 element 26 - 30 MHz	7.6dB	£69.95
SY27-4	4 element 26 - 30 Mhz	9.6dB	£79.95
CUSHCRAFT			OUR PRICE
A3S	3 element Beam 10/15/20 Mtr		£459.95
A3WS	3 element Beam 12/17 Mtr		£349.95
MA5B	Mini Beam 10/12/15/17/20		£299.95
D3	Dipole 7/14/21/28 MHz 7.86 Mtr Long		£199.95
D4	Dipole 7/14/21/28 MHz 10.3Mtr Long		£299.95
MA5V	Vertical 14 - 30 MHz		£229.95
R6000	Vertical 14 - 50 MHz		£299.95
R8	Vertical 7 - 50 MHz		£469.95
AR2	2 Mtr Ringo Ranger		£39.95
ARX6	6 Mtr Ringo Ranger Hi-gain		£129.95
ROTATOR			
AR300	Lightweight rotator with controller		£49.95

20% DISCOUNT on all ZX YAGIS

ZX 20-4	4 El.	14Mhz Beam	11.4dB	~~£259.00~~	£207.20
ZX 30-3	3 El.	10Mhz Beam	9.1dB	~~£220.00~~	£176.00
ZX 4-3	3 El.	70Mhz Beam	9.1dB	~~£99.95~~	£79.96
ZX 6-2	2 El.	50Mhz Beam	6.2dB	~~£49.95~~	£39.96
ZX 6-5	5 El.	50Mhz Beam	12.1dB	~~£129.00~~	£103.20
ZX 6-6	6 El.	50Mhz Beam	12.5dB	~~£149.95~~	£119.96

ICOM

IN STOCK!

ICOM IC-756 PRO MK II
• 100W HF plus 100W 6 mtrs
• LATEST DSP Technology

~~£2606~~ **£2495** | 3 CHEQUES OF **£835.00** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

1.2GHZ & DSP OPTIONAL

ICOM IC-910
• VHF/UHF All mode TX
• 100W 2mtr/ 75W 70cm

~~£1399~~ **£1299** | 3 CHEQUES OF **£436.33** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

ICOM IC-706 MK IIG
• 100W HF/6 + 50W
• 2M + 20W 70cms

~~£1299~~ **£899** | 3 CHEQUES OF **£303.00** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

PRICE MATCH

ICOM IC-7400
Improved version of IC-746 with same DSP chip system as IC-756 Pro II
• 100W HF + 6mtrs • 100W 2mtrs

£1499 | 3 CHEQUES OF **£503.00** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

ICOM IC-718
100W HF Transceiver
• Built in Keyer • General coverage RX

~~£699~~ **£549** | 3 CHEQUES OF **£186.33** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

KENWOOD

IN STOCK!

KENWOOD TS-2000
• 0 - 500MHz (with 1200MHz optional)
• Built in Tuner - GREAT RADIO!

£1699 | 3 CHEQUES OF **£569.66** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

KENWOOD TS-570 DGE
• 100W HF radio with a superb DSP RX.

~~£999.95~~ **£849** | 3 CHEQUES OF **£286.33** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

KENWOOD D700E
• Dual Band Mobile
• Built in TNC

£449 | 3 CHEQUES OF **£153.00** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

IN STOCK!

KENWOOD TH-F7E
• Dual band 144/430 TX
• Wideband (100kHz - 1300MHz) RX

~~£1249~~ **£289** | 3 CHEQUES OF **£99.66** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

SGC SG-230
AUTO ATU
• 1.8 - 30MHz
• 200W PEP

£359.95 | 3 CHEQUES OF **£123.31** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

YAESU

1 ONLY at SPECIAL PRICE CALL!

NOW WITH FREE ACCESSORIES

FT 1000MP MK V
• HF 200W All mode transceiver

£2899 | 3 CHEQUES OF **£969.66** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

NEW!

YAESU FTV1000 Mk V FIELD
New 100 Watt version of the Famous MKV above with built in Power supply

£2200 | 3 CHEQUES OF **£736.00** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

YAESU FT 920
• HF + 6 metres
• full DSP and ATU c/w AM & FM

~~£1199~~ **£1099** | 3 CHEQUES OF **£369.66** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

TRADE IN BEST PRICES

YAESU VX-5R
•50-144-430MHz
•Wide Band Receiver
•Ultra Rugged Construction

~~£359~~ **£269** | 3 CHEQUES OF **£93.00** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

MH-FNB72
YAESU FT817 - HEAVY DUTY BATTERY PACK

• Ultra high capacity 9.6V 1700 mAH
• Includes special 3 hour rapid charge cable for use with MH-C777

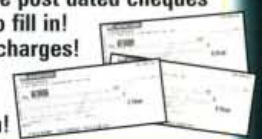
£59.95 P&P £2.75

NEW OPENING HOURS
MONDAY - FRIDAY 9.30 - 5.30
CLOSED ALL DAY SATURDAY

CHEQUESPREAD INTEREST FREE!

- Simply divide the price *(including carriage)* into 3 equal payments.
- Write 3 cheques dated in consecutive months starting with today's date.
- Write your telephone number, cheque card number and expiry date on the back of each cheque.
- Post them to us, enclosing your name & address & we will (subject to status) send your goods immediately.

- **Pay by three post dated cheques**
- **No forms to fill in!**
- **No hidden charges!**
- **No hassle!**
- **No catch!**
- **No problem!**



CHEQUESPREAD prices quoted include postage & packing CHEQUESPREAD minimum order: £99

ALL GOODS SHIPPED FOR 24 HR DELIVERY P&P: £10 (UK Mainland) unless otherwise stated E&OE

MAHA CHARGERS AND BATTERIES - buy online on our secure website www.mahaenergy.co.u

.....LARGE STOCKS.....FAST DELIVERY..... EXPERT ADVICE.....

3090 n a radio store

24hr shopping
NEVADA ONLINE STORE
www.nevada.co.uk
.....the site you can TRUST.....

bsite: www.nevada.co.uk • fax: 023 9231 3091
ND SEE US AT OUR RADIO SUPERSTORE...

MAKE A NOTE IN YOUR DIARY NOW!

SUMMER OPEN DAY SAT 6th JULY 9:30-3:00

DUE to the CANCELLATION of the BRIGHTON RALLY we are holding a SUMMER OPEN DAY - Walk around our WAREHOUSE and PICK UP a BARGAIN!

- PLENTY OF PARKING
- 2 METRE TALK IN STATION
- REFRESHMENTS
- DISPLAYS FROM THE MAIN MANUFACTURERS

WorldSpace Radios

Hitachi WS1 — IN STOCK!

- Receive over 40 channels of *fade free digital programs direct from satellite - from almost anywhere in the world*
- Plus FM/MW/SW
- SW1: 2.3 - 7.3MHz, SW2: 9.5 - 26.1MHz

£149.00
3 CHEQUES OF £53.00 P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

NEW! WS2000

£129.00
3 CHEQUES OF £46.33 P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

- 10 presets and last station memory
- LC-display for station, category/features
- Headphone jack/stereo line out connectors
- External jack for multimedia & data service
- Easy-to-aim antenna detachable WorldSpace antenna
- Battery or mains operation
- AC/DC adaptor include

Sanyo WS1000

£149.00
3 CHEQUES OF £53.00 P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

A stylish satellite radio for home or portable use. listen on the internal speaker or connect it to your Hi-Fi via phono line out or digital output connectors. Removeable flip up satellite dish is supplied c/w 5 metres extension cable.

- Stereo headphone socket
- 32 memories
- Mains or battery operation *(Mains adaptor included)*
- Remote control
- Multimedia port

buy online at our secure website
www.worldspaceradios.co.uk

YAESU

YAESU FT-847
- All mode DSP Transceiver
- 70cm - Top Band

~~£1600~~ **£1199** | 3 CHEQUES OF **£403.00** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

PRICE MATCH

YAESU FT-817
- HF/6/2/70 cms + wide RX
- Inc Nicads, Charger, antenna & mic

~~£799~~ **£599** | 3 CHEQUES OF **£203.00** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

FREE MAINS PSU

YAESU FRG-100
- Solid coverage from 50kHz - 30MHz
- All mode reception of AM, SSB & CW

~~£499~~ **£399** | 3 CHEQUES OF **£136.33** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

NEW HIGH POWER TUNER

PALSTAR AT1500 CV

1.5kW (2kW Peak) HF Antenna Tuner
Now with:
- NEW Heavy Duty Edge-Wound **silver plated roller inductor** for ***ultra high efficiency*** and ***reliability***
- Matches dipoles, centre fed doublets, G5RV's balanced feeders, Verticals, single wire, delta loops, beams, windoms, Inverted V's
- Built in 4:1 balun for balanced wire feeders
- Bypass position for quick straight-through antenna connection with SWR/POWER monitoring.
- 6 position antenna selector switching
- Average power meter reading to 3000 Watts
- Vernier dial plates for more accurate settings.

£389 | 3 CHEQUES OF **£133.00** | P&P £10
PAY BY CHEQUESPREAD INTEREST FREE

USED EQUIPMENT
BUY WITH CONFIDENCE!
All safety tested & guaranteed for 3 months

VHF Equipment		
ALINCO DJ-580E	2M/70CM HANDHELD	129.00
ALINCO DJ-SR1	PMR 446 TRANSCEIVER	79.00
ALINCO DR-140E	2M MOBILE TRANSCEIVER	159.00
ALINCO DR-430E	70CM MOBILE TRANSCEIVER	169.00
ALINCO DR-610E	2M/70CM MOBILE TRANSCEIVER	225.00
KENWOOD TM-231E	2M FM MOBILE TRANSCEIVER	119.00
KENWOOD TM-D700E	2M/70CM MOBILE+APRS	329.00
KENW'D TS-790E+PS31	2M/70/23CM BASE STATION	1195.00
STANDARD C558+ACC	2M/70CM HANDHELD	165.00
TRIO TR-7500	2M FM 10W TRANSCEIVER	105.00
TRIO TR-7800	2M FM 25W TRANSCEIVER	149.95
YAESU FT290R	2M MULTIMODE PORTABLE	159.00
YAESU FT290R2+CASE	2M MULTIMODE PORTABLE	229.00
YAESU FT290RII	2M MULTIMODE PORTABLE	225.00
YAESU FT290RII+FL2025	2M MULTIMODE PORTABLE	239.00
YAESU FT40R	70CM HANDHELD	119.00
YAESU FT470 + ACC	2M/70CM HAND+MOB ADPT CASE	139.00
YAESU FT-90R	2M/70CM MOBILE TRANSCEIVER	285.00
YAESU FTL2014	VHF PMR TRANSCEIVER	75.00
HF Equipment		
ICOM IC-706II+DSP	HF-2M TRANSCEIVER	599.00
ICOM IC751A	100 W HF TRANSCEIVER	399.00
ICOM IC-756 PRO	HF/6M 100W TX+DSP	1399.00
ICOM IC-775DSP	150W HF BASE TRANSCEIVER	1895.00
KENWOOD TS-950S	150W HF BASE TRANSCEIVER	999.00
YAESU FT890	100W HF TRANSCEIVER	375.00
YAESU FT-900	100W HF TRANSCEIVER	499.00
Receivers		
AOR AR-8200-2	HANDHELD SCANNER	275.00
MAYCOM AR108	HANDHELD SCANNER	55.00
REALISTIC PRO 2026	MOBILE SCANNING RECEIVER	99.00
YUPITERU MVT9000II	HANDHELD SCANNER	275.00
AOR AR8600+PSU	WIDEBAND RECEIVER	549.00
ICOM IC-R7000	WIDEBAND RECEIVER	399.00
ICOM IC-R7000+REM/CONT	WIDEBAND RECEIVER	495.00
ICOM IC-R75	HF RECEIVER	499.00
ICOM PCR-1000	COMPUTER BASED RECEIVER	249.00
LOWE HF225 EUROPA	HF RECEIVER	375.00
LOWE HF225+CASE, FM & K PADHF RECEIVER + ACC		329.00
ROBERTS R827	SHORTWAVE RECEIVER	89.00
YAESU VR-5000+DSP	WIDEBAND RECEIVER	529.00
Accessories		
ALINCO EDC-91	FAST CHARGER DJ-V5	32.00
BENCHER PADDLE KEY	DUAL PADDLE KEY	64.75
DAIWA LA-2080H	2M 80W AMPLIFIER+PREAMP	85.00
ICOM IC-AT500	AUTO ANTENNA TUNER	299.00
KENWOOD VS-2	VOICE BOARD	40.00
KENWOOD YK88-S1	2.4KHZ SSB FILTER TS450/850	49.00
M W MODS MM4001KB	MW-MODS RTTY RX/TX INC KB	49.00
MFJ-447	ELECTRONIC MEMORY KEYER UNIT	19.00
NISSEI SJCD-308	BASE MICROPHONE (8 PIN YAESU)	39.95
OPTO SCOUT 40	FREQUENCY COUNTER	259.00
PALSTAR AT1500	ANTENNA TUNER 1500W PEP	249.00
PALSTAR AT-300	ANTENNA TUNER	79.00
PALSTAR PS-30M	25-30A POWER SUPPLY	75.00
TIMEWAVE DSP599ZX	ALL MODE DSP UNIT	259.00
TOKYO HL100B/21-28	LINEAR AMP 10-100W 21-28MHZ	129.00
W4RT 1-TOUCH TUNER	OTT UNIT FOR FT-817	49.95
WATSON WPR2	PRECLECTOR	29.95
WATSON WR5001+DC ADAPT	VHF/UHF RX TESTER	59.00
WELTZ SP-420	VHF/UHF POWER METER	65.00
YAESU FIF232C VAN	COMPUTER INTERFACE (FT736)	59.00
YAESU FL2050	2M 50W LINEAR AMP	50.00

YAESU ROTATORS

G1000C HEAVY DUTY
C/W Control Box & 25m Cable
~~£559.00~~ **£499.00** | P&P £10

G650C MEDIUM DUTY
C/W Control Box & 25m Cable
~~£459.00~~ **£399.00** | P&P £10

G450C LIGHT DUTY C/W Control Box & 25m Cable
~~£349.00~~ **£325.00** | P&P £10

GC038 LOWER MAST CLAMP **£25.00**

HEIL PRO-SET

PRO SET 4
For contesters & DX'ers who want to cut through the pile ups. Using Hc4 insert.
PRO SET 5
A fuller range insert for rag chewers who want quality with clarity. Hc5 insert.
£129.95 | P&P £7.50

DAIWA
Please add £6 p&p (uk mainland)
SWR/POWER METERS

CN801H	1.8 - 200MHZ 2KW	***£109.95***
CN801V	140 - 525MHZ 200W	***£119.95***
CN101L	1.8 - 150MHZ 1.5KW	***£59.95***
CN103LN	140 - 525MHZ 200W	***£65.95***

MH-C204
3 HOUR INTELLIGENT CHARGER for 4 AA/AAA cells

for use in the CAR or at HOME!

£26.95 P&P £6.50

PowerEx MH-C204F Plus Charger named "BEST CHARGER & BATTERIES" by PCPhoto Magazine 2001
EDITORS' CHOICE PCPhoto

- **Rapid charge 2 or 4 AA/AA NiCD/NiMH batteries safely**
- **2 independent charging banks, ie you can charge 2 NiMH AA in one bank and 2 NiCD AAA in the other simultaneously!**
- **Rejuvenate and restore dead batteries**
- **Can be used on a 12V power supply and in a car with optional car kit (£5)**
- **Supplied with UK AC adaptor**

SPECIAL OFFER! MH-C204F Plus -

- 1 MH-204 Intelligent Charger
- 4 x AA 1600mAH batteries
- UK AC adaptor
- Car kit

£39.95 P&P £6.50

WORTH £45! IF PURCHASED SEPARATELY

MH-C777 plus
UNIVERSAL CHARGER AND ANALYSER

for use in the CAR or at HOME!

- Charge almost any Lithium Ion, NiMH, and NiCad battery packs for your ham radios, scanners, PMR 446, cellular phones, digital cameras, camcorders.
- Analyse & condition battery packs and display capacity
- Display digital voltage, time and capacity
- Lightweight international 80-240V AC mains adaptor
- Car kit for charging from cigarette lighter
- Charge AA, AAA, C, D battery cells using optional holders. Battery holders...*£2 each*

£89.95 P&P £8.50

MH-DPB140LI *POWEREX LITHIUM ION POWERBANK*
High capacity Lithium Ion external battery pack for Digital Cameras

Take MORE PIX with your digital camera

- This 7.2V 1400 maH pack includes a handy belt pouch to carry the main battery, a UK mains charger, A Car cigar adaptor lead for re-charging in the car, and a selection of camera adaptor leads.
- Shoot up to 2 or 3 times more photo per recharge than with the internal battery
- Compatible with Nikon Coolpix 995, 880, 885, 775, Olympus E-10, E-100, HP Photosmart 618, 912, and Minolta Dimage 5, 7. and cameras using 7.2V DC

DIGITAL CAMERA OWNERS LOOK!

£69.95 P&P £6.50

MH-DPB180M *POWEREX NIMH POWERBANK*
Digital Camera External Battery Pack

- A complete solution this Powerbank battery system includes, 6V 1,800 mAH Battery Pack, 4 hour Mains quick charger, Car cigar adaptor charger, Universal Camera cable and carrying case. Compatible with most leading brands of camera.

£59.95 P&P £6.50

buy online at our secure website www.mahaenergy.co.uk

MINI 2000
LOW PROFILE 3 BAND MINI BEAM
£229.95 | P&P £15

ZX YAGI
LOW COST MULTIBAND VERTICALS

Two lightweight multiband verticals that really work. Each is supplied with a set of 3 wire radials. These may be laid out or bent to suit your location. Power handling approx 500W.

P&P £10

GP3.....**£69.95** 10/15/20M, 3.9 mtrs

GP3W....**£69.95** 12/17/30M, 5 mtrs

k WORLDSPACE RADIOS - buy online on our secure website www.worldspaceradios.co.uk

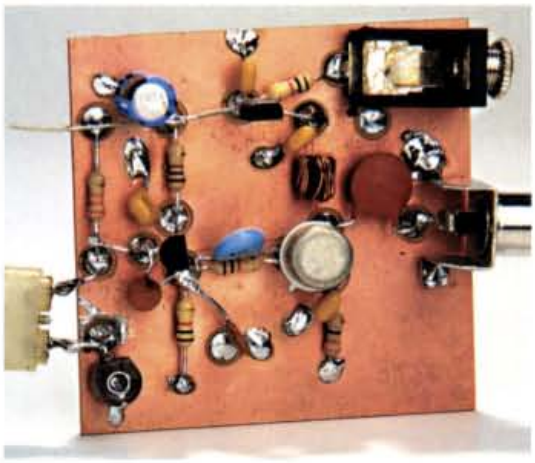
..USE YOUR CREDIT CARD FOR SAME DAY DESPATCH...

DELTA MasterCard SWITCH VISA

Carrying On The Practical Way

This month the Rev. George Dobbs G3RJV suggest you get your spanners ready! Why?....because this month's project is a bolt-together transceiver but don't forget the appropriate quotation before you start!

"One can do nothing with nothing, but one can do plenty with little".
Adrien Hallet



You can build a 'bolt-together' transceiver - which you may be able to do immediately if you've already built the previously published projects! The 'OXO' shown here, is the heart of the design.

The nature of this column is such that I describe little radio projects which can be built in an evening using a few inexpensive parts. It's an attractive form of radio construction – to be able to settle down in the evening, build something and have it finished and working before bedtime.

These days very few of us have the satisfaction of a job in which we can look back on the day and say: : "I built that" or "that 's all my own work". And from experience...I can say it's pleasing to end the day with a sense of completion.

Hence, many of the projects published in Carrying on the Practical Way (COTPW) are little station accessories or simple receivers or transmitters. However, a reader suggested to me that it was some time since I had featured a complete transceiver.

Well – by their very nature, not many transceivers are going to appear in this column! But over the years, **all the necessary circuits** have appeared to comprise several transceivers.

So, this month I will show a bolt-together-transceiver made up from circuits which have been shown in previous editions of this column. All the separate sections are easy to build and some readers may actually have already built most of this transceiver.

I've chosen to place this simple transceiver on the 7MHz (40 metres) amateur band. But it would work well on any band from 1.8 to 14MHz (160 – 20 metres).

Basic Requirements

So, let's look at the basic requirements: a simple transceiver requires a transmitter section, a receiver section and some means of switching between the two. There are a whole variety of simple QRP transmitter circuits described in magazines and books, but I've returned to an old classic, the **GM3OXX OXO Transmitter**.

The circuit for the OXO transmitter is shown in **Fig. 1**. Unbelievably the OXO is over 20 years old! It first appeared in an article by **George Burt GM3OXX** in the G QRP Club journal, *Sprat*, in the Autumn of 1981.

The circuit is a two stage (crystal oscillator and power amplifier) simple transmitter. In the original a BC107 was used for the oscillator, but I have used a 2N2222A transistor ...because I have a lot of them!

The original power amplifier transistor was a 2N3866 and although still available...they are expensive (I used a 2N4427 because I have some in stock). The third transistor is a *pnp* type used as a switch, to key the power amplifier with reference to ground. (A simpler version could omit this stage and key the 12V to the power amplifier).

The oscillator is radio frequency (r.f.) and d.c. coupled to the power amplifier (p.a.) stage, so the p.a. transistor and its emitter components must be in place to allow oscillation. The emitter resistor of the power amplifier is marked as 39Ω. This value is designed to give a power output in the order of 1W.

Individual examples of the transmitter may need adjustment of the 39Ω resistor to obtain the desired r.f. output. A capacitor (150pF in this example) then takes some of the oscillator output signal for use in the receiver section.

Island OXO

I built the OXO transmitter using the 'island construction' techniques, which I described in COTPW for February 2002. The version of the technique I described there is the milling of 5mm islands in a copper clad board using the New Jersey QRP Club end mill tool designed for the purpose.

The photograph shows the layout of the transmitter. Stick-on 'islands', either home-made or from the Copper Island Construction Outfit described in the article above could also be used. It took me less than an hour to build the transmitter and get it on the air!

Warning: Although the transmitter output is only in the order of 1W, **it requires adequate harmonic filtering to be used on the air**. And to help. **Fig. 2** shows the circuit and the data for the low-pass filter I used is as follows:

Band MHz	C1, 7 pF	C3, 5 pF	L2, 6 turns	L4 turns	Core	Wire swg
7.0	270	680	19	21	T37-6	26

Incidentally, if you think that the use of a seven-element low-pass filter for such a simple circuit is excessive, speak to the Radiocommunications Agency!

The values for the filter are taken from the **W3NQN** 'standard value capacitor' charts for harmonic filters. However, I must confess to not having built this filter for my prototype, simply because I've got a complete set of such filters for the h.f. Amateur bands. These are all built on small non-etched circuit boards with a phono plug and socket at

each end. (see COTPW for March 1997)

Having reached this point, the little transmitter can be put on the air and tested in use. And then it's a case of "so to bed"..... with a sense of completion and perhaps a QRP QSO recorded in the logbook, ready for another evening to complete the transceiver.

Obvious Approach

The obvious approach to make a simple transceiver is to use the oscillator stage of the transmitter as the local oscillator of a direct conversion receiver. So, the next requirement is a mixer stage to convert the Amateur band transmissions directly to audio signals.

Going back to the COTPW October 2001 we can find another useful circuit, here I described a minimalist receiver using a single field effect transistor (f.e.t.) mixer. The circuit is shown in **Fig. 3**.

The input circuit uses a moulded inductor tuned with two series capacitors, which provide the required low impedance input. The local oscillator signal, from the 150pF capacitor in Fig. 1. (oscillator output) is fed to a 100kΩ resistor in the gate of a single f.e.t.

A very simple circuit indeed, but it provides a surprisingly effective mixer. The resultant audio signal (the difference between the antenna signal and the local oscillator) appears at the source of the f.e.t., where it meets an r.f. decoupling filter. In my version I built the mixer, ugly style, on a small piece of copper clad board.

Receiver Section

The receiver section is completed with an audio amplifier. Almost any circuit - providing a gain of approximately 30dB - would serve. You may already have a suitable amplifier ready for use.

For mine I used the LM380 audio amplifier circuit shown in **Fig. 4**. This is the circuit featured in the February 2002 edition of COTPW. In that article I described four ways to build the circuit – so take your pick!

With the addition of the audio amplifier the transceiver modules are complete. It's then possible to bolt these circuit elements together and use the transceiver as it stands.

However, if you don't switch off the receiver or provide muting...the receiver produces a quite unpleasant rasping sound when you're transmitting. Not aesthetically pleasing perhaps...but it does provide a useful 'side-tone' to monitor the keying.

To help preserve the mixer front-end, I suggest that a couple of back-to-back diodes are added to the receiver input as shown in **Fig. 5**. This protection limits the input going to the receiver to about 0.6V.

So, there you have it. A transceiver built from bits and pieces of circuitry 'bolted together'. You may even have all the modules already built...and only require that spanner!

PW

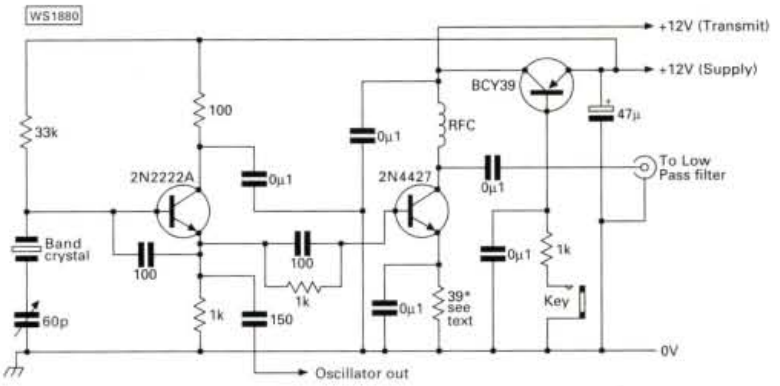
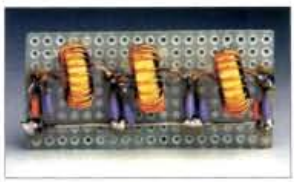


Fig. 1: The circuit for the OXO transmitter. This popular QRP transmitter design first appeared in an article by George Burt GM3OXX in the G-QRP Club journal, *Sprat*, in the Autumn of 1981 (see text).



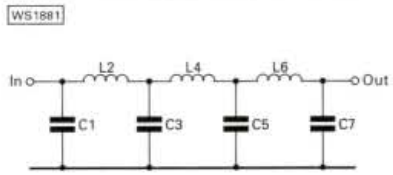


Fig. 2: The transmitter output, although only in the order of 1W, requires adequate harmonic filtering to be used on the air. The circuit and data shown is for the 7MHz low-pass filter used by G3RJV. Note the wire gauge is not critical. Use size to comfortably fill the core about three-quarters of full circumference. The number of turns has been rounded to the nearest whole number from the calculated value. (see text).

Fig. 3: First published in COTPW October 2001, this circuit was described by G3RJV as a 'Minimalist Receiver' using a single f.e.t. mixer (see text).

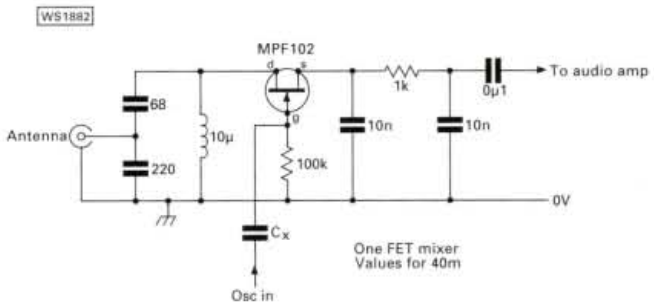


Fig 4: The LM380 audio amplifier circuit shown is a favourite building block of G3RJV's - featured in the February 2002 edition of COTPW (see text).

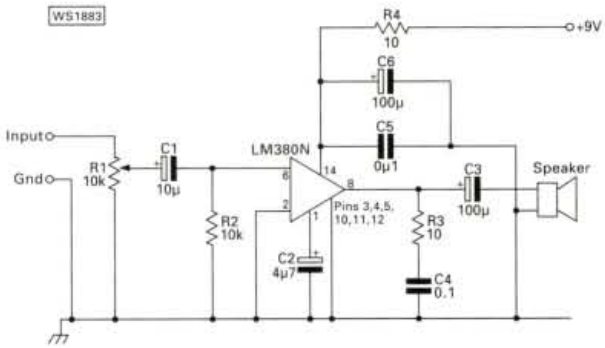
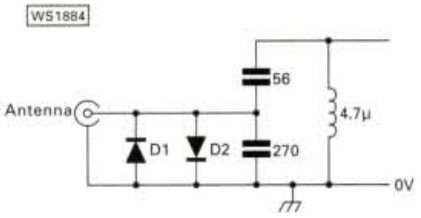


Fig. 5: Two back-to-back diodes can be added to the receiver input as shown. This protection limits the input going to the receiver to about 0.6V (see text).



Worthington's Warti

Our resident cartoonist John Worthington GW3COI has done something unusual, putting down his pipe for a while, he's managed to come up with a double helping of memories of a wartime radio operator. And despite 'Going For A Burton' he didn't get a suit!

One of the places where Royal Air Force Telegraphists were trained during the Second World War, if you could have taken away the 'bull' and other unpleasantness, would have made the ideal place for a 'hobby' weekend or even longer. However, in the winter of 1941 I wouldn't have had any thought to this possibility, but with hindsight it would have suited the 'would-be Amateur' perfectly.

In fact, when you think about the idea of spending the entire War pursuing your hobby (you could say), it's possible to discover many instances where there were fighter pilots who enjoyed flying, tank drivers who enjoyed driving, shouting Drill Instructors (who obviously enjoyed their job), pompous Officers who liked their pomposity, etc.

Day dreaming - as I do sat up here on my Welsh coastal peninsula, with only the occasional sheep passing by to cause excitement* - about those who actually enjoyed their jobs during the Second World War, I wondered idly where I had been for my first QSO and realised it was the one which happened to be at RAF Compton Basset.

*Actually those sheep are really useful you know! As they wander past our cottage I can - if I'm quick enough - often save postage to the *PW* offices by pinning letters/packages to their fleece. Sheep are nothing like the vague wanders you townies think they are - instead they have set routes and follow something akin to a timetable, breakfast nibble here, lunchtime at Worthington's and grass for tea in the village. Knowing this (my old callsign in the RAF was 'Tightwad') you can rely on the sheep eventually passing the local Post (sorry - Consignia) Office...where the letters will be spotted, removed from the fleece and posted for you. Occasionally you'll get a 'Second Class' sheep which takes longer...but I can't complain it's the luck of the draw! But now back to reality.

Real Air Force

The facilities for teaching Wireless Operators were first class at Compton, in that there was plenty of transmitters, receivers and other gear which were currently in use in the **Real** Air Force. For example, one of the widely used transmitters/receivers, the TR9, which covered 1.5 to 9MHz, was used to familiarise students with something they would perhaps handle for short range work.

The 'TR9 Room' was about half the size of a tennis court and had a single shelf running round the circumference inside. There were enough examples of the set to enable each class to equip every pupil.

The instructor would demonstrate the workings of the set and then turn the entire class of some 30 'Sprogs' (RAF speak for beginners) loose to try and contact the one who had the same crystal frequency in the set he was standing by. It says a lot for the robust qualities of the rig when you consider how many 'cack handed' operators mis-tuned, and frantically twiddled the receiver tuning in that room full of would-be radio men.

Consider also the fact that each TR9 had a short length of wire for an antenna, thus rendering a bad mis-match to its power amplifier (p.a.) stage. Despite this, slowly, one-by-one each operator managed to contact his 'twin' in the cacophony of voices and excitement.

Most classes never achieved 100% success and the Instructor would give the failures his attention, using each failure to illustrate to the class what mistakes they were making. Needless to say, I was the first in my class to make contact (Believe that if you will!).

But ever since, I have always attacked those who said the TR9 was a hopelessly old design for use in aircraft such as the *Spitfire*, etc. Maybe it was, I never flew with one...as I was ground-based! However, in any case I believe that the Germans didn't have a better one themselves in 1941. Anyway, that was my first QSO and my next was to be not using the TR9's 4W...instead it was to be QRO at 3kW operating the RAF's main transmitters!

Five Letter Groups

Radio Amateurs and would-be Amateurs (generally speaking) seem to have a difficult job learning the Morse code. But at least they don't have to learn to read groups of five letters which is the lot of the 'pro' operators! Plain language is much easier to read because you can anticipate it with practice whereas enciphered groups are impossible to say what the next letter will be.

Mind you, in my opinion, learning the Morse code in the company of a

"...It says a lot for the robust qualities of the rig when you consider how many 'cack handed' operators mis-tuned, and frantically twiddled the receiver tuning in that room full of would-be radio men".

me Memories

"There was a chap sitting one seat away from me who had a piece of cardboard on his desk with something written on it. I leaned over to get a better view...and could hardly believe what it was - the Morse alphabet in bold letters"!

few thousand others represents the easiest way to go. This is because you get at least four hours intensive training a day every day for six months, although this period was reduced if the individual progressed rapidly.

I was one of the 'standard progress' host and we learned at the steady rate of one letter faster each week in the first three month period. At the end of this we were all given an examination to see if we had made the 12w.p.m. mark.

There was no stopping to pick up slow folk on the way, but one word a week was quite slow really and the great majority were carried along by each other's company. It was a 'Morse atmosphere' where you heard examples of the code every wakeful hour as the street signs, shop fronts, newspapers, etc. were practised on outside the school.

There was no messing about with funny rhymes to aid memory of the letters which had similar dots or dashes, etc. You simply had to sit down with your own key and headphones and write down your instructor's sending or your immediate neighbour's, who were on the benches beside you.

The air was thick with fag smoke and the bleep of hundreds of headphones. It was like a gigantic 'housey housey' (Bingo) session and the prize was the ability to read and send Morse.

There was no supervision to detect those who had virtually given up hope - this fact would show in the end of session examination. Most of my pals were confident of passing as indeed they had progressed to 14w.p.m. or so. We were then ready for the big day!

Going For A Burton

So, we filed into the big examination room above the premises of Burton's the well known High Street tailors...not quite 'Going for a Burton' - suit' eh? Then, about 300 of us at a time, put the headphones on...accompanied by the inevitable nervousness which all exams bring.

The Chief Instructor gave us a bit of a practice run and then announced he would send three minutes of five letter groups. He didn't say how many errors we would be 'allowed' so our collective nerves were made that much worse.

There was a chap sitting one seat away from me who had a piece of cardboard on his desk with something written on it. I leaned over to get a better view and could hardly believe what it was - the Morse alphabet in bold letters!

The exam started and I was very thankful to find that 12w.p.m. was much slower than we had rehearsed. It was so much slower I was able to throw a quick glance at the Morse Card bloke...and yes, he was studying it between letters and trying to take down and identify one per second (which is what 12w.p.m. is). It nearly put me off my job, but, in the company of all my pals, I passed.

I can never understand why the cardboard user didn't write it all on the back of his left hand...I thought we all did (No, I'm kidding). He'd attempted the 'impossible', **but it does go to show that there are folk who find the Morse code an impossible task**.

Those who can't learn the code are few and far between though. I say this because I've never yet met any RAF man who failed to get through, although there are plenty who never touched a Morse key again when they hit 'Civvy' street and I wonder how many are active Radio Amateurs nowadays? See you on 7MHz...you can pounce on me anytime on the c.w. section...whether or not you use a piece of cardboard I'll be pleased to work you! PW

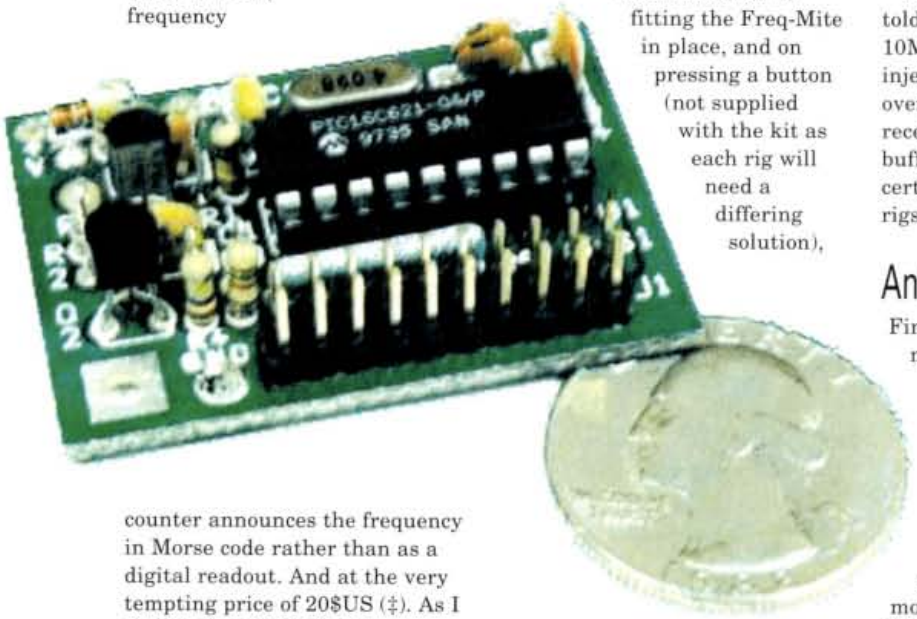
The Freq-Mite

Tony Fishpool G4WIF describes the Freq-Mite, and it's a mite that you might like to have inside your rig.

Providing a frequency readout for those small rigs has always presented a problem. Do you spend twice as much as the rig probably cost on one of the many Digital Frequency counter kits? During a recent visit to the Dayton HamVention in the USA, I discovered a small item on display, that just might fit the bill!

During HamVention, **Dave Benson** of Small Wonder Labs was presenting a new 'read-out' solution in the form of the Freq-Mite. This tiny frequency counter announces the frequency in Morse code rather than as a digital readout. And at the very tempting price of 20$US (‡). As I though it a wonderful idea, I bought two!

‡ Including postage to virtually anywhere in the world.



The Kit

The kit comprises of a small high quality double sided 30×45mm p.c.b. complete with all components and a pre-programmed PIC chip. The circuit caters for virtually all i.f. offsets, by various combinations of shorting jumpers.

Following the very clear instructions, construction took under an hour. It worked!

The first rig I tried it on was an Epiphyte 2 (EP2), which has a 455kHz i.f. with the v.f.o. running **above** the incoming signal. The Freq-Mite's sensitivity is quoted at between 0.1V at 1MHz to 0.3V at 20MHz. Fortunately the EP2 has an ideal place to pick off the v.f.o. output at one of the internal connectors.

After making the modifications and fitting the Freq-Mite in place, and on pressing a button (not supplied with the kit as each rig will need a differing solution), the counter announces, at 13 or 25 words per minute (w.p.m.), the three least significant digits in kHz.

The unit's output in Morse isn't just limited to the kHz part of the oscillator frequency. There's also an option to announce the actual v.f.o. frequency including the leading (MHz) component. (This makes for a useful diagnostic aid.).

Special Rig

Next I tried the Freq-Mite on the NORCAL 38 Special rig which has a variable crystal oscillator (VXO) running at 22MHz to produce an i.f. of 12MHz. The set's VXO uses the internal oscillator in the NE602 mixer / oscillator chip.

The oscillator signal available at pins 6 or 7, was 0.3V which when loaded by the 'Mite' dropped to 0.2V, but that's the only place you can take a signal, as the mixer is also part of the NE602.

Though the Mite accurately told me where I was in the 10MHz band, the drop in mixer injection level affected the overall sensitivity of the receiver. I think some additional buffer amplification would certainly help on these simple rigs.

Antenna Analyser

Finally, I fitted a Freq-Mite to my MFJ-204 antenna analyser. This is one of the early models without a digital read-out. It does have a dial but it's only loosely aware of the concept of accuracy!

The Freq-Mite has an additional frequency counter mode, which will announce the MHz as well as the kHz reading. The unit worked all the way up to 30MHz when plumbed into the MFJ's counter output.

I think Small Wonder have a winner here, and you can find out more from their website **http://www.fix.net/~jparker/sml.html**

Dave can also be reached by telephone **(001) 860 667 3536** (before 0930 Eastern time please). PW

Valve & Vintage

(**Continued from April 2002 issue**).

Charles Miller continues the story of his RAF radar days and has entitled this exciting instalment as 'The Last of Stenigot'. He also describes his time at a remarkable radar station in Suffolk!

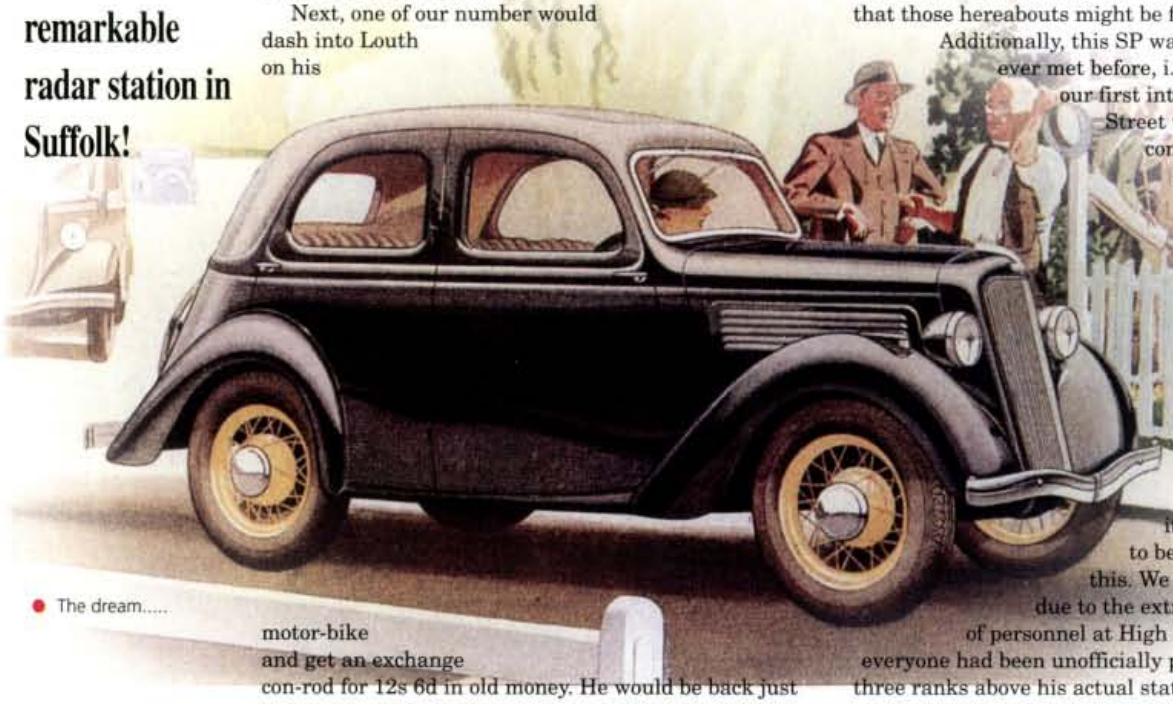
After the chaos of Ventnor and the peculiarities of Humberstone even Stenigot seemed bearable when Derek and I returned there spring was giving way to early summer. Provided I could scrape up the petrol money I could get home pretty well every weekend in my old model C Ford.

I should have added oil money as well, because the engine was now consuming the latter voraciously and the 120 cross-country miles were about all it could manage before the sump ran dry. The crankshaft not unnaturally resented this treatment and virtually ever journey back to Stenigot ended with a big-end clattering.

Thus the Wednesday sports afternoons tended to be taken up by frenzied mechanical work designed to get the Ford back in fettle for outings in Louth and the next home trip. It was frenzied because Ford engines didn't have the easily replaced shell big-end bearings used by other manufacturers.

Instead, you had to replace the whole con-rod, which meant taking off the cylinder head as well as the sump to withdraw the associated piston. We got this down to fine art, to the stage where we could commence dismantling immediately after lunch and have the faulty con-rod out by 3pm.

Next, one of our number would dash into Louth on his motor-bike and get an exchange con-rod for 12s 6d in old money. He would be back just before 4pm and we'd have the new rod fitted and the engine reassembled by 5pm ready for an evening out. (This was imperative if we were to maintain a healthy diet because the food provided by the Stenigot catering staff left much to be desired).



● The dream.....

Editorial warning: *Readers of the squeamish variety are warned to treat the following passage with care, or better still...after meals!* ***Editor***).

Incidentally it's not possible for me to give precise details of the cuisine since most of the offerings could have been identified only by a trained pathologist! Indeed, the only item on which general consensus was obtained was something reckoned to be fried after-birth. Some hardy souls were known actually to consume this fragrant delicacy, but in our immediate circle one glance at it was enough to send us hurrying into Louth for fish and chips.

With this in mind, I can hardly credit now that when, after a couple of months, Derek and I were summoned by the station adjutant. Informed that we were to be sent off trouble-shooting again, we actually protested that it ought to be someone else's turn! We were told not to be cheeky and to get a move on, but had we known what was awaiting us we would, far from complaining, have fallen on our knees and offered up thanks!

High Street

Our destination was to be an establishment called RAF High Street, near the village of Darsham in Suffolk. It was just off the main A12 road near its junction with the A144 road to Halesworth.

How were we then to know that this blessed spot was the nearest thing to heaven on earth to which a National Serviceman could aspire? By calculation, it was about 130 miles (193km approx) from Stenigot by road and thus just about in the safe range of the Ford, which we topped up with transformer oil at ten shillings per bottle to the taxpayer especially for the trip.

Our sojourn at High Street began agreeably enough for as we drove in through the main gate and by the guardroom, a Corporal Security Policeman (SP) leapt to his feet and presented us with a smart salute. He then gave us a sheepish smile and said that he thought we must have officers, although we could hardly credit that those hereabouts might be found in a car like this!

Additionally, this SP was like none we had ever met before, i.e., human. This was our first intimation that High Street was not going to be a conventional establishment, and the next revelation followed in short order.

On our asking to be directed to the Station Adjutant (Adj), the SP referred us to a Sergeant Tanner. This puzzled us, because it was usual for the Adj to be of a higher rank than this. We were than told that due to the extremely small number of personnel at High Street - a few dozen - everyone had been unofficially promoted to two or three ranks above his actual status.

So, the Commanding Officer (CO) was no more than a Flight Lieutenant, the Adj., and the responsible positions were filled by Sergeants. For ourselves, we were immediately up-graded to be in complete charge of keeping the radar gear on the air. It was ridiculous, but who were we to complain, when it meant that instead of a common or garden billet we were allocated a cosy little two-man bunk, RAF-speak for what amounted to a bed-sitter?

There was more to come. After booking us in Tanner

suggested we repair to the cookhouse, where the cook and his assistant would be pleased to rustle up some supper for us. Now, **this in itself was incredible**, for at other sites we had visited, if you were too late for the regular meals you went hungry.

The second eye-opener was that the food itself would not have disgraced a classy restaurant. The two individuals responsible for this astonishing state of affairs (and I will for once give real names) were Sergeant Wynn and Corporal Jackson. It would be nice to know that - if they were still around - to let them know that their culinary skills are not forgotten.

Genuine Miller Memory

In relating the following passage, I wish to affirm that what took place **was absolutely genuine** and that I'm not making anything up. The following morning after our arrival, there was a gentle knock at our door and we awoke to find a different Corporal SP towering over our beds.

Expecting to be summarily arrested - we had sufficient misdemeanours to our discredit to make this entirely possible - we were flabbergasted when he spoke. "Got your mugs handy? I've got a jug of tea for you".

It was incredible, **but it was real**. It couldn't last, **but it did**. I can't believe that there has ever been, before or since, an RAF station run on such humane and sensible lines as was High Street under Flight-lieutenant McDonald (again, his real name), and of course it paid off because everyone was ready and willing to pull their weight.

At the end of our first week we learned another astonishing facet of life at High Street. At 1700 on the Friday evening one of the permanent staff radar operators announced that he was off home for the weekend.

"You've got a forty-eight then", we asked.

"Oh, no, this is a thirty-six", he said.

How could this be? A 36 hour pass was supposed to extend from 1200hours on Saturday until 2359 hours on Sunday; even a 48 was officially only from 2359 on Friday until 2359 on Sunday!

"It's different at High Street", he explained patiently, "Nobody does any work on Saturday mornings anyway, so you might as well go home at 2359 on Friday. There again, you're off duty from 1700, so you might as well go home then". This creative accounting extended to the timing of your return to camp. "You're not on duty until 0900 on Monday, so as long as you're back by 0859 it's quite all right".

In this manner did the High Street permanent staff elongate a 36 into 63 hours. The same remarkable logic was applied to a 48 to make it extend from 1700 on Thursday until 0859 on Monday and thus comfortably to exceed the official period of a 72-hour pass.

The latter could be extrapolated to begin at mid-day on Wednesday, due to that afternoon being designated for sport and therefore not counting as a real duty period. (We never did hear of anyone asking for a 96, but if they had they would probably have disappeared for at least a week).

Defence Of The Realm?

It was difficult to assess just what part RAF High Street played in the Defence of the Realm. There was a permanent staff of about half a dozen radar operators under an amiable Jamaican Sergeant who kept a low profile. I personally never encountered him at all on duty except for once speaking to him on the telephone (and that was a wrong number).

So, presumably radar plotting was being carried out?

● The reality...up and pushing...

However, since we worked only office hours and with the relaxed approach to leave periods a potential enemy would have had ample opportunity of sending in war planes without fear of detection.

Now and again there were periods of extra activity when batches of G reservists arrived for training. The G reserve had been established supposedly to maintain an ever-ready supply of radar operators should a war break out, and operators were obliged to return for a two-week revisionary stint in the first year after their demobilisation.

● The reality...."Get out and get under"!

The first batch we encountered timed its arrival for 2000 on a Friday evening, a most unwise choice. High Street had virtually closed down for the weekend and the entire motor transport section - two Hillman staff cars and a Bedford QL lorry - had been commandeered to take Officers and Men to a dance in nearby Halesworth.

So, a telephoned request to the Guardroom for transport - by the Senior Man - of 30 reservists newly detrained at Darsham railway station met with the offer of a single bicycle. This was not exactly an encouraging beginning for their fortnight's visit but in any case, as far as we could make out their main ambition was to consume as much alcohol and to bed as many local girls as possible during the next two weeks, with re-honing their radar operating skills a long way down the list.

As a result the bleary-eyed, hung-over crews that gathered at R Block on Monday morning were hardly inspiring as Britain's first line of defence against the 'Red Menace'.

In order to give them all sufficient experience at the receiver and plotting table we had to keep the transmitters going from early morning until late at night. By the time we had followed the prescribed running-down procedure it was past midnight when we emerged from the transmitter block.

Fortunately, under High Street's liberal regime anyone, who had to work after midnight, even if only for a few minutes, automatically had the next morning off until noon. This rest period was inviolable, even on the mornings when the CO made his routine inspection of quarters; the simple notice Late duty on the door ensured that not even he would disturb those inside. And you could always depend on getting one of Wynn and Jacksons specially cooked late breakfasts. Stenigot was never like this...

PW

Antenna ANTICS

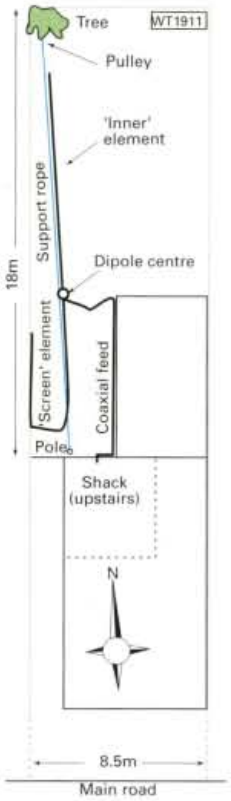


Fig. 1: A plan of my semi-detached (to the east) property to show how narrow it is. To the west, my neighbour is only a narrow passage away too.

Having been granted access to the h.f. bands Tex Swann M3NGS wasted no time putting up a set of antennas. But it wasn't quite as easy as he had imagined!

Having played with v.h.f. radio for many years, designing and building antennas for various bands, I imagined that an h.f. antenna would be quite easy to get up into the air and working. However, the shape and size of the space available didn't make it as easy as I'd thought.

When I bought my house many years ago, the location, whilst not ideal for v.h.f. work, was shaped to enable me to 'hide' a 10m pole from all but the immediate neighbours. At the top of this pole, I've had a variety of v.h.f. and u.h.f. antennas over the period that we have lived there.

Effective Antenna

Now with the h.f. bands available to me, I was struggling to get an effective antenna up that would cover more than one band with reasonable matching and effectiveness. My property, built around 1900, is constructed on a long narrow plot as shown in **Fig. 1**.

The ground slopes upwards to the north of the garden and is bounded on the western side by a rather thick hedge at around 3m high. The one solitary tree, that can be used as an end support, is in the northwestern corner.

My shack (not what the XYL calls it!) is in one of the upstairs bedrooms in the middle of the house with a window towards the rear overlooking a small yard of about five by three metres. The three section telescopic support pole, to which I've attached a pulley system, is some 8.5m long and is free standing.

Feeding any h.f. antenna in the centre is going to be a problem as I cannot put up a support pole towards the front of the house, though if I could, a full G5RV would be in order. So, I'm limited to going up the garden and trying to feed the antenna as efficiently as possible.

Nest Of Dipoles

The antenna I've opted for is a nest of dipoles, well almost a nest of dipoles as I'll explain later. The illustration of **Fig. 2** shows the set-up in side view, and although it's not drawn to scale, it shows the problems I have.

The coaxial feeder goes out of the house through a hole just above floor height (drilled by a helpful telecomms engineer). By feeding the coaxial cable along the wall at the same height, I've managed to keep the feeder at least five metres away from the elements connected to the screen.

I started with three elements on each side, for 7, 14 and 21MHz and arranged them as shown with the shortest tied directly to the support rope along its length. The longer elements run below and parallel (about 200mm away) until beyond the end of the shorter element, then it comes up to the support rope and is tied in place for the rest of its length.

Initially the 7MHz element ran parallel under both and separated again by some 200mm again from the element above. I chose this arrangement to shorten the overall length of the antenna by around 400mm per element. But on carrying out tests, I found there was a degree of interaction between the elements, although each was resonant at band centre on its own.

Best Combination

So, back to the drawing board! I set about finding the best combination of elements to give best matching and, the set-up I arrived at was to have three elements attached at the coaxial screen connection and just two elements attached to the inner side of the coaxial cable feeder. The 7MHz element also seems to perform adequately on 21MHz.

I also invested in a matching unit to take out the last vestiges of mismatch at the rig end of the coaxial cable. I found that for my almost QRP power levels the TU4 matching unit from Lake Electronics works well, and with the addition of BNC plugs and sockets I can change bands quicker. I also decided it would also make mobile operation much easier!

The bandwidth of the system is such that if matched in the centre of each band (7.05, 14.175 and 21.25MHz) there's no need to alter the matching at all, allowing rapid tuning up and down the band.

Recently though, I've invested in an automatic matching unit that comes in kit form for use with other antennas that I plan to try out, one of which is a multi-band vertical mounted at the northern end of the garden. However, that's in the future.

I'm enjoying myself on the h.f. bands, though I tend to listen far more than I transmit. And in listening I've heard several M3s working good DX into several USA call areas. My best DX to date, is a good 'rag-chew' with **Ken SO8ZH**, a Norwegian national, now living in Poland.

PW

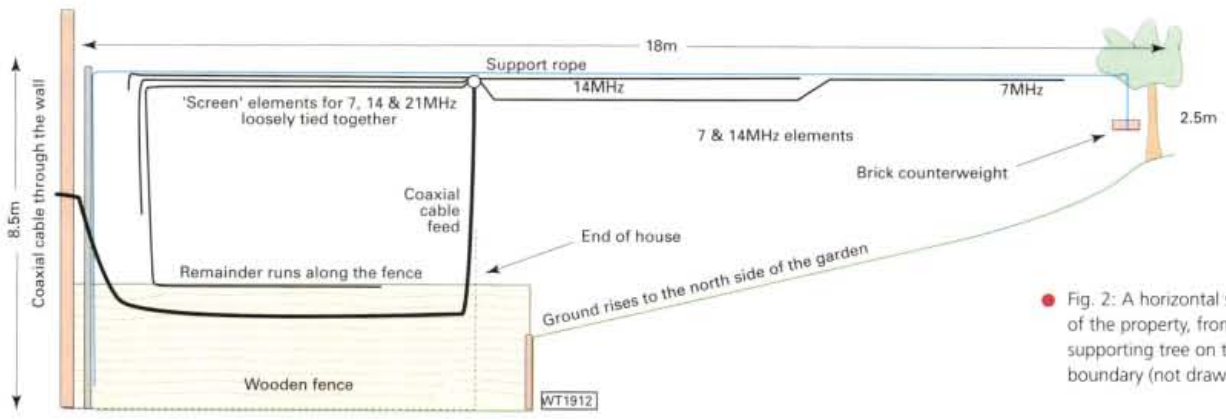


Fig. 2: A horizontal section of the rear of the property, from the shack to the supporting tree on the northern boundary (not drawn to scale).

VHF DXER

DAVID BUTLER G4ASR,
YEW TREE COTTAGE
LOWER MAESCOED
HEREFORDSHIRE HR2 0HP

TEL: (01873) 860679

E-MAIL: g4asr@btinternet.com

REPORTS & INFORMATION BY THE LAST SATURDAY OF EACH MONTH.

THIS MONTH DAVID BUTLER G4ASR HAS REPORTS OF AURORAL ACTIVITY ON THE VHF BANDS

Propagation on the v.h.f. and u.h.f. bands during April can best be summed up as four days of very good auroral propagation and precious little else! The predicted upsurge in 50MHz trans-equatorial propagation (t.e.p.) to southern Africa failed to materialise with only a few transitory openings being reported.

At least some of my predictions were correct! There were some brief Sporadic-E (Sp-E) openings on the 50MHz band to southern Europe, the Lyrids meteor shower did their business and of course there was an exceptional period of auroral back-scatter propagation.

Before looking in more detail at your auroral contacts I'll take a look at other reports and the first is quite exceptional. During the first 16 days of April there were absolutely no 50MHz QSOs reported from the UK with the exception of one very short but exceedingly rare DX contact.

At 0958UTC on Sunday April 7 **David Courtier-Dutton G3FPQ** (Surrey IO91) heard the station of KH6SX located in the Hawaiian Islands. A contact on 50.111MHz was quickly established before signals faded out. Although the path is 'only' 11500km it does pass through the auroral zone making this a very difficult path indeed. The station of KH6SX (BK29) later reported that he had worked 50MHz operators in England, Belgium, Portugal, Italy and Yugoslavia.

Johan ON4ANT (Belgium) reported a contact with the station of KH6/K6MOI. He mentions that signals exhibited the classic polar flutter that is often heard on the h.f. bands. **Mike I7CSB** (Italy JN71) mentions working KH6/K6MOI at 1009UTC on April 7 and hearing the station of KH6SX. All signals were gone within three minutes.

During March there were 19 days when t.e.p. contacts on the 50MHz band were reported from the UK to stations in southern Africa. I was therefore surprised to note that hardly any t.e.p. contacts were reported during April. It was just like a switch being turned off!

On April 19 around 1230UTC **Norman Vincent G3NVO** (Berkshire IO91) spotted the beacon stations ZS6TWB (South Africa) and 7Q7SIX (Malawi) but no other activity. Propagation was better on April 21 between 1130-1230UTC with contacts being reported with the stations of ZS6DN, ZS6WB and ZS6NK. Later in the afternoon between 1450-1500UTC a few operators located in southern England managed to make s.s.b. contact with the station of CX4AAJ (Uruguay) on 50.110MHz.

What was probably the first of this summer's 50MHz Sp-E openings occurred on Saturday April 20 between 1400-1500UTC. Stations in Italy were contacted during the hour long opening, mainly by operators in north-west England. Activity was quite high as the opening coincided with the Italian Lazio 2002 contest. As a consequence of this the much sought after station of HV5PUL (Vatican City) was active and succeeded in making a number of s.s.b. contacts with UK stations.

Fred Handscombe G4BWP manning the UK Six Metre Group stand at the 2002 50MHz to Microwaves Convention.

AURORA

The appearance of aurora is closely linked to solar activity. It generally peaks about two years before and after solar maximum.

Auroras occur most often around the spring and autumn equinoxes (March-April and September-October) although some of very large events have appeared in any month. Radio aurora are usually heard first in late afternoon and may re-appear later in the evening.

During large geomagnetic storms, high energy particles flow into the ionosphere near the polar regions where they ionise regions of the E-layer. This ionisation scatters (the more appropriate term is 'back-scatter') radio signals in the v.h.f. and u.h.f. range.

Although high power radar signals as high as 3000MHz have been scattered back from the aurora borealis (northern lights) most Amateur Radio contacts are made on the 50, 70, 144 and 430MHz bands. By pointing a directional antenna such as a Yagi northwards towards the auroral activity, c.w. or s.s.b. contacts over oblique back-scatter paths up to 2000kms apart may be completed.

The latitude of your QTH is very important. Stations located in Scotland will experience considerably more auroral

openings than stations located in Cornwall. Although high power is undeniably useful it is not obligatory!

Very large antenna arrays can be more of a hindrance than a help as the narrower beamwidth makes it more difficult to find the optimum reflection points. A single long Yagi will give very good results.

Between April 17-20 there was a four day period of intense geomagnetic activity with numerous coronal mass ejections. This gave rise to some good auroral back-scatter openings on the 50, 70, 144 and 430MHz bands.

Turning now to reports of contacts on the 50MHz band and the first comes from s.w.l. **David Whittaker BRS25429**. Between 1515-1615UTC on April 17 he heard operators from 11 countries. These included G, GM, GW, PA0 and DK3EE, EI8HZ, ES2CM, LA7AJ, OH2TP, OZ0JX and SM6MPA. In the event on April 19 David heard over 40 stations with high activity from Scandinavia (LA, SM). The same countries were heard again with the addition of stations from Northern Ireland.

Jim Rabbitts GM8LFB reports that one hour after the auroral opening on April 19 finished there was a large 50MHz Auroral-E opening. At his QTH (Wick IO88) this unique event commenced around 1940UTC with clear s.s.b. contacts (no auroral distortion) being made with the stations of ES2NA, ES2RW, OH3NWQ, OZ1KEF and YL2KA. The opening finished with Jim at 2100UTC and was then followed by a further auroral phase around midnight. Other DX heard or worked by other UK operators during the Auroral-E opening included LB6SE (Norway), OH6KTL (Finland), SP2BMX (Poland), TF8IWT (Iceland) and the beacon station JW7SIX (Svalbard).

It's a shame that so few 70MHz operators make the effort to be active on the band during periods of aurora. It is virtually the only propagation mode that enables operators to work the extremities of the UK relatively easily. It's far more difficult on tropo at this frequency and Sp-E and meteor scatter are not so effective either. Some of the stations known to be active on the 70MHz band during the auroral openings included EI3IO (IO63), GM4DIJ (IO85), MM1CXE (IO86), GW3HWR (IO71), G3NKS (IO81), G3SDL (IO91), G4OBK (IO94) and G8TOK (JO01).

Turning now to the 144MHz band and a report from **Angie Sitton G0HGA** (Hertfordshire IO91). She jubilantly reports that the aurora on April 19 was the first one in ten years that she had participated in.

Angie runs an Icom IC-271E transceiver at 20W into a 5-element Tonna Yagi at 3m above ground, fixed on a northerly heading especially for the aurora. Much to her surprise she made c.w. contacts with the stations of MM0CIN (514km), GM3WOJ (700km) and GM4VVX (730km). Angie hopes this report will serve to encourage more operators with low power and small or low antennas to have a go and never give up!

Another operator who did have a go with a small antenna was **Adrian Rawlings M0ANS** (Bedfordshire IO91). He was using an Icom IC-746 transceiver running 100W into a 5-element Yagi. Inspired by a message he read on the 'twometrecw' internet newsgroup he switched on his rig and was amazed to immediately hear auroral signals. His c.w. contacts made on the 144MHz band included the stations of G3APO, GM0KLN, GM3WOJ, GM4ILS and GM4VVX.

Colin Smith GM0CLN (Midlothian IO85) reports making 22 c.w. contacts between 1520-1755UTC on April 17. His longest distance QSOs included the stations of SM7OVK (1054km), DL3HRT (1150km), DH7FB (1159km), DL3AMB (1172km), DG5CST (1182km) and DL3BUE (1225km). Colin uses a Trio TR-751E transceiver and 100W solid state amplifier into a 14-element MET Yagi mounted less than 3m above ground level. On the following day, between 1655-1735UTC, he made a further ten c.w. contacts with stations in G, GM, Denmark, France and Norway. Propagation was not as good, the best DX being the station of LA0BY (JO59) at 930km.

At my QTH (Herefordshire IO81) all four openings on the 144MHz band commenced around 1430UTC and lasted approximately three hours in each instance. Contacts were made on c.w. as this is by far the most effective mode during auroral openings.

My QSOs on April 17 included OZ9PP (Denmark), LY2IC (Lithuania) at 1800km and YL3AG (Latvia) at 1820km. These three stations were made on a beam-heading of 40°. Stations in Germany, Netherlands and Scotland were also contacted with the 18-element beam pointing between 15 to 30°.

The opening on April 18 was much weaker with only six 144MHz contacts being made. The best DX was with the station of OZ2TF (JO46). The event on April 19 was considerably better with c.w. contacts being made again with the stations of LY2IC and YL3AG. I also found SP2CNW, SP2MKO SP2OFW (Poland), SK6DK and SM6ENG (Sweden). Between 1630-1730UTC many German stations were contacted as were stations in France, Belgium and The Netherlands.

Surprisingly I also contacted the stations of LY2IC and YL3AG for the third time in the week during the opening on July 20. Other DX included SK6DK (JO67), SK6QW (JO68) and a handful of operators in Eire and Scotland.

PROPAGATION FORECAST

This is the most exciting period of the year for operators to be active on the v.h.f. bands. During June and July the Sporadic-E propagation will provide 50MHz openings on a daily basis. It will often reach 70MHz and occasionally as high as the 144MHz band.

The propagation will encompass all of Europe with single-hop contacts between 500-2000km easily made. Signals are apt to be exceedingly strong allowing low power stations with bits of wet string as antennas to make Sp-E contacts. Trust me - it's true!

Openings may occur at any time but is most common from 0800-1100UTC and 1600-1900UTC. The direction of propagation will vary daily, sometimes on an hourly basis.

Signals on the 50MHz band may come from any direction. Paths are different on the 144MHz band. It's exceedingly rare in the UK for propagation to appear from the north and north-east. As a generalisation the best paths will be from east through to south. Propagation on the 50MHz band will become very intense and multi-hop paths will form enabling contacts to be made into North Africa and the Middle East.

Nick Peckett G4KUX informs me that he is currently working in Kabul, Afghanistan restoring the telecoms infrastructure. He is expected to be there for several months and will be active as YA7X on the 50MHz band. He will be running 100W into a 4-element Yagi. So keep a look out for him during the Sp-E season.

Another exciting multi-hop path is across the Atlantic Ocean to North America. These events normally occur between 1800-2200UTC, sometimes earlier, sometimes later.

ELUSIVE OPENINGS

Openings on the 144MHz band are more elusive but much more exciting! The most effective way of catching them is to be in the shack for the next eight weeks, during daylight hours with the receiver continually tuning the band!

Another successful way is to keep your receiver tuned to 144.300MHz throughout the optimum hours. But you really do need to know what is happening on lower frequencies first or else it's all a waste of time.

As I mentioned last month I always catch openings on the 144MHz band by listening to the intensity of openings on the 50MHz band. If an opening is particularly strong then there's every chance that it will appear on the 144MHz band. Only experience will tell you what is 'particularly strong'. I also listen to signals on the 28 and 70MHz Amateur bands, Band I television around 48-49MHz and the f.m. broadcast band between 88-108MHz.

An analysis of UK reports from 2001 during the period mid-June to mid-July showed that there were eleven days when openings occurred on the 144MHz band. Of these only two occurred in the morning period, 0730-0900UTC and 1100-1130UTC. The majority of openings were recorded in the time period 1630-1930UTC.

When the band opens you will hear a cacophony of stations trying to make DX contacts on the s.s.b. calling frequency. Don't do what they do - just move up or down some tens of kilohertz and call CQ DX on a clear frequency.

DEADLINES

That's it again for another month. Forward any news, views, comments or photographs to the address and by the date given at the top of the column.

Thanks for your letters. Remember to keep a look out for the elusive DX signals on the 144MHZ band. See you again next month.

73, David G4ASR

HF HIGHLIGHTS

CARL MASON GW0VSW

12 LLWYN-Y-BRYN
CRYMLYN PARC
SKEWEN
WEST GLAMORGAN SA10 6DZ

Tel: (01792) 817321 E-MAIL: carl@gw0vsw.freeserve.co.uk

REPORTS, INFORMATION AND PHOTOGRAPHS TO ME PLEASE BY THE 15TH OF EACH MONTH.

CARL MASON GW0VSW PRESENTS MORE OF YOUR HF BAND REPORTS AND INTRODUCES ANOTHER NEW REPORTER!

Douglas Byrne G3KPO has just returned from a well-earned holiday in the Canary Islands staying on island of Tenerife. He was pleased to receive a "Most friendly welcome" from three local Amateurs who live in the town of Puerto de la Cruz. Erwin EA8AX, **Wolfram EA8AJS** and his wife **Sharon EA8BUO** are all enjoying retirement and spend a good deal of time on the h.f. bands. They particularly enjoy QSOs with amateurs from the UK and are always pleased to confirm AF-004.

Some of you may know that Douglas is the curator of **The National Wireless Museum**, **Tel: (01983) 567665** based in Ryde on the Isle of Wight. The museum is part of the Wireless Preservation Society, a registered charity that is devoted to the collection, restoration and preservation of radio, television and sound reproduction equipment for educational, historical and cultural purposes. The museum is well worth a visit.

THAILAND BAND ALLOCATIONS

I hadn't realised that Amateurs in Thailand could only operate on four h.f. bands. At present the authorities only allow operating on 7, 14, 21 and 28MHz but efforts are being made to get allocations on the WARC bands.

A report from **Ray Gerrard HS0/G3NOM** the Secretary International for the Radio Amateur Society of Thailand said that "The Thai WARC allocations are now in legal limbo and unlikely to be assigned for another two years. The Thai Post and Telegraph Department (PTD) of the Ministry of Transport and Communications are the body responsible for Amateur Radio administration and have already agreed in principle to the assignment of the WARC bands to Amateur Radio services. In recent years they have moved other users out of these bands. However, all significant changes to telecommunications rules, regulations or laws in Thailand are now on hold pending the establishment of a National Telecommunications Commission (NTC).

"At the time of writing, it's unknown when the commission will be appointed or when it can begin to take decisions. Informed sources in Thailand's telecommunications sector doubt that the body will be established within one year. The RAST estimate that it will be at least another two years before the WARC or other bands are authorised for use. The society will release any news of positive developments to the international amateur community as soon as possible".

A search on the Internet revealed several interesting sites including **www.qsl.net/rast/text/licensing.html** which gives information on radio licensing in Thailand as well as the club station HS0AC at the Asian Institute of Technology near Bangkok for which Ray is Station Manager.

DX NEWS

Those of you who have managed to work **P5/4L4FN** (North Korea) will be pleased to learn that s.s.b. contacts have now been approved for DXCC credit. Ed Giorgadze has made over 6000 contacts so far and QSL manager Bruce Paige KK5DO has already received 3000 requests for the P5 QSL card. These will have been printed by the time you read this.

Some activity using RTTY on 21080kHz has been reported but this has yet to receive approval. For further news and updates check out the website at **http://www.amsatnet.com/p5.html**

Prefix hunters may be interested to know that until July 11 all Belgian Amateurs may use the special prefix 'OS' instead of the more usual ON prefix to commemorate the Battle of the Golden Spurs which took place back in 1302. In South America, Argentinean Amateurs will also be using a special prefix to celebrate the program The Radio Amateur - A Safe Way for our Children supported by the Radio Club USHUAIA (LU8XW).

Until the end of the year callsigns beginning with LU, LW or AZ can be replaced with the new prefixes AY, L5 or L6. Details are available at the website **http://geocities.com/rcushu**

Finally, Trey N5KO has a new QSL Manager for his **HC8N** activity from the Galapagos Islands: **Randy Becnel, W5UE, PO Box 170, Kiln, MS 39556-0170, USA**. Trey's previous QSL Manager was Derek Wills AA5BT who is stepping down after 10 years service and 50,000 QSL requests answered! Routes for other HC8 stations include HC8A via KU9C, HC8GR via N5KO, HC8L via N2AU and HC8Z and HD8Z via NE8Z.

YOUR REPORTS

On to your reports now and a warm welcome to new reporter **Gary Hurst 2E0IDX** from Cheshunt, Hertfordshire. Gary has spent a good deal of time on 7MHz between 2130 and 2300UTC using a IC-706MkIIG and half-size G5RV. Gary's 50W s.s.b. contacts include PT9KK (Brazil), TF3TF (Iceland), CM6YI (Cuba), FY5FU (French Guiana), LU1IV (Argentina), ZP3CTW (Paraguay), CE3CDV (Chile) and CX3AL (Uruguay). Keep up the good work Gary and good luck with your Scouting activities.

Whilst on holiday in New York **Larry Stringer G4GZG** picked up a Elecraft K1 transceiver kit with a two band module for 7 and 14MHz. Larry says "The K1 had an

● Wolfram EA8AJS and his wife Sharon EA8BUO spend a good deal of time on the h.f. bands and particularly enjoy QSOs with UK Radio Amateurs.

excellent instruction manual and is very easy to build. I recommend it to anyone who can use a soldering iron in anger! I have worked some good DX with the rig including ZL (New Zealand) and VK (Australia) using less than 5W to a 22m doublet. This month I have managed QSOs with most countries in Europe despite the patchy band conditions". You can find further information on the Elecraft K1 at **www.elecraft.com**

THE 14 & 18MHz BANDS

The log of **Mike Baker G3SUK** in Stowmarket, Suffolk lists 14MHz s.s.b. contacts with PT7BZ (Brazil), VK2IF (Australia), FM/lV3BTY (Martinique) and VP8DBR (Falkland Islands) between 2130 and 2315UTC using an IC-746 with 80W to a Carolina Windom.

As a Salvation Army Emergency Co-ordinator, Anglia Division, Mike has had a busy time this month. The group were asked to attend the Centre Parcs fire at Elvedon and provided refreshments for over 200 firemen. A short while later they responded to another large building fire in Ipswich. Both incidents finished in the early hours of the morning and all group members are in need of some serious sleep!

Also spending some time on 14MHz was **Robin Trebilcock GW3ZCF**, Bishopston near Swansea. Using an IC-775 and 100W into a horizontal loop Robin's s.s.b. contacts include VK3EGN (Australia) 0932, H7DX (Nicaragua) 1009 and TI9M (Cocos Island) at 1021 followed later in the evening by D44AC (Cape Verde) 1938 and FJ/PA3GIO/M (St Martin) at 2252UTC. Robin also tried PSK31 around 2300 working XE1M (Mexico), LU7OKU (Argentina), HK4ANC (Colombia), YE1D (Indonesia) and 3W2LWS (Vietnam) before calling it a day at 2359UTC.

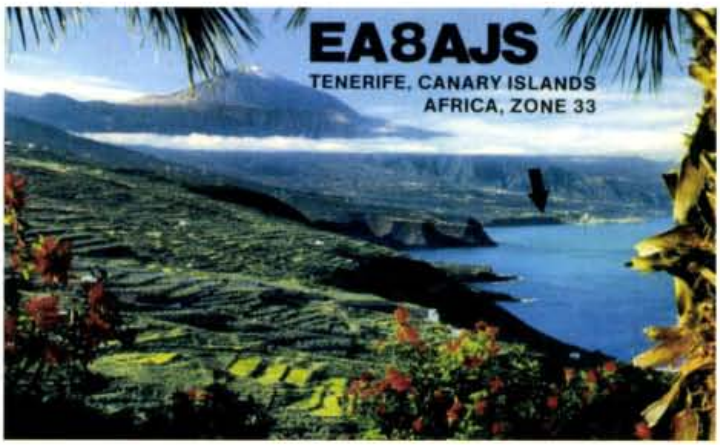
A MFJ-9020 QRP transceiver and Pro-Am whip on a car roof may not be the most ideal contest station but **Peter Lowrie MI5JYK**, Newtonabbey, Northern Ireland was surprised just how well this set-up worked. The DX included several QSOs with stations in UA9 (Asiatic Russia), FM5 (Martinique), VP5 (Turks & Caicos Islands), P40 (Aruba) and SV9 (Crete) running just 5W of c.w.

On to 18MHz now and another QRP enthusiast **Roy Walker G0TAK** near Kendal, Cumbria who lists all c.w. contacts with OM9ANL (Slovak Republic) 0937, K2VV (U.S.A.) in Missouri 1403, DN2WE (Germany) 1410, T94YT (Bosnia-Herzegovina) 1520, RA9UCR (Asiatic Russia) 1538, SM7CHX (Sweden) 1543, OK2PDN (Czech Republic) and RA3RJB (European Russia) at 1631UTC using a QRP Plus, Alinco EDX tuner and an 80m long wire loop.

THE 21 & 24MHz BANDS

Martyn Medcalf M3VAM, Chelmsford, Essex is doing extremely well with his modest antenna on 21MHz. This month's 10W s.s.b. contacts include H22H (Cyprus), 9H3M (Malta), EA8BH (Canary Islands), NV4X (U.S.A.) in North Carolina, CN2R (Morocco), VU2SWS (India), JW0HR (Svalbard) and D44TD (Cape Verde) between 1100 and 2000UTC. Equipment was an IC-746, SGC-237 tuner with 27 foot of wire.

Using s.s.b. once again, Mike G3SUK worked ET3PMW (Ethiopia) at 1921UTC followed a few minutes later by RW1ZW/MM onboard his fishing vessel who informed Mike that the vessel has now been sold so he will not be operating /MM for much longer!



Using PSK31 once again Robin GW3ZCF worked JP3AZM (Japan) 1708, 3W2LWS (Vietnam) once again at 1714 and WX7E (USA) in Oregon at 2021UTC.

Meanwhile Roy G0TAK switched to s.s.b. and with 10W worked UA9CDV (Asiatic Russia), YZ7AA (Yugoslavia) and 9A8M (Croatia) between 1410 and 1500UTC.

Nearly all of you report that conditions on 24MHz were poor compared to previous months and only two logs show QSOs on this band. The s.s.b. of Mike G3SUK found HZ1AB (Saudi Arabia) and LZ2LH (Bulgaria) around 1510UTC while Robin GW3ZCF used c.w. at 100 watts to work JT1BH (Mongolia) and VU2OXX (India) around 0940 followed later by s.s.b. contacts with J6/W9CEO (St Lucia) 1225 and W7LR (U.S.A.) in Montana) at 1503UTC.

THE 28MHz BAND

Robin also found time to operate on 28MHz where s.s.b. DX included D44TA (Cape Verde) 1225, 9K2ZZ (Kuwait) 1415, OD5/OK1MU (Lebanon) 1559, YF1AR (Indonesia) 1639, 3V8BB (Tunisia) 1728 and N6MU USA) in Orange County, California at 1959UTC.

Finally, on to **Owen Williams G0PHY** in Biggleswade, Bedfordshire who found band conditions "very good" logging s.s.b. contacts with 9G5MD (Ghana), A61AJ (United Arab Emirates) and D44TD (Cape Verde) between 1130 and 1150UTC while later followed FY5FY (French Guiana), 4U1WB (U.S.A.) at the World Bank, Washington D.C., PJ5/UA1ACX (St Maarten), PA3GIO/HI9 (Dominican Republic) and ZF2AF (Cayman Islands) using 100W to a dipole antenna.

SIGNING OFF

Well our reporters have certainly found plenty of DX to work this month and I hope that the information encourages you all to get in your shacks and operate, especially the newly licensed amongst you. Modest equipment does not mean modest DX! My thanks to you all for your letters, emails and reports and to **Tedd Mirglotta** (*OPDX Bulletin*) for the DX information. See you again next month.

73. Carl GW0VSW

PW LISTENING & OPERATING WATCH LIST. (All times UTC)

Sean Gilbert G4UJC operates around 0700-1100 and 2100-0000 7 days a week on all bands using an IC-746 and loft mounted G5RV dipole antenna.

Rob Mannion G3FXD's station at his new home is not yet fully operational but he is working most days on 7, 18 and 28MHz from his car using an Alinco DX-70 running c.w. and s.s.b. at 50W to Pro-AM mobile whips. He's on 7MHz around 1700 (clock time) most weekdays on the way home from office (c.w. and s.s.b.) when he parks up for 30 minutes.

Carl Mason GW0VSW listens and operates on 7030/14060 most mornings at 0700 with a FT-817 and inverted Carolina Windom.

Don McLean G3NOF operates 1030 Saturdays on 3.685MHz on the ISWL Net or 1030 Sundays on the Yeovil ARC Net on 3.665MHz using a Kenwood TS-950 and trapped dipole antenna.

George Woods G3LPT operates an open net on 29.630 n.b.f.m. 0830 Tuesday to Friday.

John Wheeler G0IUE monitors 28.600 n.b.f.m. every evening between 1730 and 2230 regardless of conditions using a Yaesu FT-920 transceiver running 100W and 2-element tri-band beam.

Brian Parsons GW0KZK listens and operates on 14.250MHZ 1000-12000 and 1400-1600 most days using an Yeasu FT-1000MP and 100W into a Carolina Windom or five band vertical.

KEYBOARD COMMS

BY ROGER COOKE G3LDI
THE OLD NURSERY, THE DRIFT, SWARDESTON, NORWICH, NORFOLK, NR14 8LQ
TEL: (01508) 570278 E-MAIL: rcooke@g3ldi.freeserve.co.uk PACKET: G3LDI @ GB7LDI

The Packet Conference 2002 meeting was the first packet meeting for several years. Despite those that keep saying that packet is dying, I think this rather proves otherwise!

I was pleased to see that there is still an enthusiasm for maintaining the network. This was reinforced when I recently gave a talk with demonstration at the local radio club where I anticipated a small un-interested crowd but I could not have been more wrong...

In fact the enthusiasm was similar to that we experienced back in 1983, during the early days of packet. I must have said something to cause a spark, because quite a number said they would be getting onto packet. Perhaps the advent of sound-card oriented software that dispenses with the need for a hardware TNC has something to do with it?

Anyway, here are the minutes of the Packet Conference held in Coventry on 13 April 2002. It's great to see such enthusiasm here too. Unfortunately I was unable to make the meeting myself.

Martin Green from the DCC in the opening ceremony can be seen in **Fig. 1**. In **Fig. 2** you can see three of the attendees after a hectic day, (left to right) **Robert G1LOA, Dave G7BNK, Mark G0WCI**.

PRESENT AT THE MEETING

The following 50 Radio Amateurs were all present at the meeting: G0BKN, G0EWH, G0KFS, G0MRH, G0CNG, G0NSW, G0SYR, G0TWN, G0WCI, G1AVF, G1BWT, G1CXE, G1DVU, G1HUL, G1IXV, G1LOA, G1ORG, G1SOG, G1YGY, G3MSW, G3OJI, G3XVV, G3ZFR, G4AFJ, G4APL, G4BBU, G4DIE, G4FPV, G4MTG, G4ROA, G4VYA, G6DZJ, G6KUI, G6TJZ, G6URP, G6VEY, G7BNK, G7CGB, G7JYF, G7RAZ, G7VBJ, G8ECJ, G8SFR, G8PZT, G8SEQ, G8TBF, G8YUP, M0DCM, M1EXO and M1FDE.

Apologies were received from: G0HDB, G1KQH, G1PLT, G3LDI, G3TIK. G4GUN, G4HIP, G4WYW, G6HJP, G7PUN, G7SRI, GM0HBI, GM1AHC, GM4JNB, GM4LNH, GM4PSX, GM4SUF, M1BFP and M1CUK.

PRELIMINARY BUSINESS

The Conference was opened at 1030 by **G1DVU**, who welcomed participants, introduced himself and explained the arrangements for the day. Despite his initial reluctance, he was voted in as Chairman for the day and **G7RAZ** was elected Minutes Secretary.

The informality of the meeting was stressed by G1DVU and the hope that each presentation would last 20 minutes with time afterwards for question and answer sessions. The agenda was to be essentially as per that circulated by **G8PZT** prior to the conference.

ROGER COOKE G3LDI DEDICATES HIS COLUMN TO THE RECENT PACKET CONFERENCE.

PRESENTATION - APRS

In his talk on the 'Automatic Position Reporting System', **Jim G1HUL** spoke of the difference between APRS and standard packet operation. He described in detail the nature and function of the UI beacons - the major component of APRS - listing also the software and hardware devices required for use of this mode.

Jim explained how the paths between stations was established by the protocol, and how network linking developed dynamically. He outlined how the various control commands, particularly in respect of digipeating - worked and recommended how users would best set up their stations, also indicating where most misconfigured stations went wrong. He also referred to the main 144MHz frequency on which most APRS activity is based (144.800MHz, f.m., 1200Baud) but also mentioned 14.105 l.s.b. (300baud) for h.f. usage.

Jim illustrated his talk with maps of stations observed, noting the value of APRS for propagation studies, as well as its inherent interest for those wishing to follow local or world events in real time. He outlined how it was possible to obtain world-wide data (such as earthquakes and volcanic activity) by means of linking to APRS servers on the internet. From his illustrations it was evident that many Amateurs were using APRS, perhaps countering in part the claim that packet radio is in decline.

● Fig.1.

During questions, G1HUL touched on the reliability of transferring messages, the patchy use of APRS and the possibility of congestion when using the same frequency.

PRESENTATION - XROUTER

In her presentation, **Paula G8PZT** introduced her node/router software, XROUTER, explaining her reasons for devloping it, particularly in the light of the deficiencies of BPQ, but also because of her wish to give it extra facilities not available on other node software. She pointed out the minimal hardware and simple OS requirements for running XROUTER, and explained the various hardware components (TNCs etc) it supported.

Paula outlined XROUTER's various features, notably its ability to handle AX25, TCP/IP and NETROM frames. She also explained its APRS functionality (including the possibility of running it as an IGATE), its PMS, Chat server and helpful sysop console.

She also pointed out the ease with which sysops can control it remotely (it even has an FTP facility), the applications it can support, and the software environments in which it will work.

During the question session, Paula touched on WW Converse server compatibility, and the problems of running XROUTER in non-Dos Windows environments. (It should be pointed out that XROUTER will have a problem only with versions of windows which do not provide a DOS emulation).

Fig.2. At the Conference (L-R) Robert G1LOA, Dave G7BNK and Mark G0WCI.

CLEARANCE APPLICATIONS

Steve G8SFR advised Conference that, since Christmas, there had been an increase in the number of 430MHz clearance applications being rejected. This was due to unspecified objections from the MOD, the primary user.

The frequencies mainly affected were at the top end of the 430MHz band, although 433.650 had suffered from similar rejections. Even split frequency operation (where these frequencies would be used for receive only) were being affected.

Steve urged those who already had clearance to use these frequencies to do so, thus asserting our right to use what had been cleared. But he also advised users of frequencies in the 431 area that a possible shift towards 430 might become necessary. Otherwise he advised that normal clearances were going through fairly quickly (10-12 weeks).

Steve also took the opportunity to reveal the new, simplified, application form available from the DCC for applying for Mailbox operation and clearance. He reminded Sysops of the need to have a current shutdown procedure in place, lest a check should be undertaken by the RA. Advice from the local RIS office about procedures was also advised.

PRESENTATION - AX25/IP INTEGRATION

Roger G3ZFR spoke of the desirability of increased co-operation between AX25 and TCP/IP packet operation - both at the level of frequency usage and also from a point of view of software applications. He outlined the rise of both modes, but indicated how TCP/IP had declined more quickly over recent years, becoming perceived as a mode for enthusiasts only. He posed the question as to how TCP/IP could be made more popular for users, particularly given that most computer operators already operated many TCP/IP applications within Windows.

Roger asserted that, whilst not ideal on a user access frequency, AX25 and IP will co-exist on a point-to-point link. Due to AX25's aggression, TCP/IP will suffer under competition (and in the face of retries) but co-existence is feasible. Certain parameters may need tweaking, and the problem of gatewaying bulletins between the IP and AX25 BBSs still needs watching, but co-operation is the key.

Roger suggested that one solution would be for all nodes to support AX25, NETROM and provide IP routing. Local provision would offer users ideally at least one AX25 port and one IP port.

An increase in high-speed links would be desirable, although he acknowledged the reduction in RF engineers involved in packet, and agreed that some very ambitious high speed projects currently being mentioned were beyond what was required – 9600 links would be quite fast enough to deal with current and projected levels of traffic. Mention was made of the high speed hardware to be exhibited later on in the day.

PRESENTATION - ACCESSING TCP/IP

Following on from his previous comments about everybody having TCP/IP courtesy of Windows applications (IE, Outlook, etc), G3ZFR went on to refer to his TNC2PPP eprom. This device, when inserted into a Tiny-2 (and other TNC2 clones), would allow it to be seen by Windows as a modem, and thus the native Windows IP application could be run - with very little modification - over radio.

Minor changes are still desirable. Users need to adjust the Windows registry to ensure that broadcast packet frame length does not exceed 256 bytes. Roger G3ZFR also anticipates further refinements of his own, particularly to avoid the initialising packets, put out at start-up, which consume bandwidth unnecessarily. The use of SLIP as well as the currently supported PPP may be envisaged.

Users of Tiny-2 TNC' wishing to use Windows applications for IP over radio will need one 27C256 Eprom. The binary file for blowing onto it (along with instructions for installation and configuration) is obtainable, either from Roger (G3ZFR@GB7COV) or from his internet site at

http://www.g3zfr.freeserve.co.uk

It was also added by G7RAZ that he had written notes for W98/NT/2K users who wished to set up SV2AGW's TCP/IP driver, enabling them to achieve them same as the above - i.e. to run Windows IP application (IE, Outlook, etc). Several participants availed themselves of these notes.

PRESENTATION - PZT AX25/IP BBS SOFTWARE

Paula G8PZT presented her own BBS software (PZTBBS), to illustrate Roger G3ZFR's aim of software which serves both the AX25 and IP communities. It's a mailbox store and forward system, with file storage/retrieval, a Web server, an FTP server, an SMTP server and client, and a POP3 server.

Paula outlined how the BBS can be interfaced to external devices and the (simple) PC hardware required, pointing out that it runs in DOS, but can be run from a Dos Window. Her aims in writing it had been in full compliance with accepted BBS standards, as well as increased user-friendliness and reliability for both user and sysop alike.

She outlined the two main mail storage models and their shortcomings. Her BBS enables users to browse through any or all of 20 message areas, thus avoiding any topics of little interest. Automated access (using WinPack, for example) is also catered for, with an area where all bulletins are accessible - allowing the software to do its selection of desired bulletins.

Continuing to explain the processes of message creation, listing, searching and inter-BBS forwarding, Paula went on to outline the various other features of the software - PZTDOS filing system to handle the file areas, an FTP server, TextWeb, an HTTP server (allowing users to use a web-type browser to read and download bulletins), as well as the WP server, PING, ECHO, REQBUL, REQDIR, and REQCFG servers.

Paula highlighted a range of user and sysop facilities unique to her system, stressing the extensive online help facilities for users and the ability of sysops to remotely control and configure the BBS, often without the need to shutdown. She was able to illustrate how her Console facility works, simplifying the work of the sysop.

To finish off G8PZT reiterated the benefits of her system - especially the AX25/IP/PSTN integration, the software's local author, as well as her commitment to quick bug fixing and to continued development. She also outlined the system's limitations - notably its limitation to DOS or Dos Windows, its absence of PPP support and NNTP server - but promised that even these were under review and might well be developed in time.

Unfortunately space has beaten me this month, so next time I will round things off by including details of the final presentations of the 2002 Packet Conference.

Roger G3LDI

DX DESTINATION

BY ED TAYLOR G3SQX
C/O PW EDITORIAL OFFICES
ARROWSMITH COURT
STATION APPROACH
BROADSTONE
DORSET BH18 8PW

E-MAIL: g3sqx@email.com

ED TAYLOR G3SQX SAYS IT'S BACKPACKERS SEASON - A FUN WAY TO GET OUTDOORS, HAVE A LITTLE EXERCISE, AND BE 'DX FOR A DAY'

Taking radio gear up to a local high point can bring surprising results on v.h.f. and u.h.f., even with low power and a modest beam. You might want to consider the 'Backpackers' contests, organised by the Radio Society of Great Britain (RSGB).

Last year the contests were suspended as a Foot and Mouth precaution, but this year they are in full swing again. There are 50 and 144MHz contests on several weekends during the year. They are an opportunity for individuals and groups to test their skills and equipment for a few hours and in Field Day, for a whole day. If interested, your local club would be a good place to find people to participate.

BACKPACKERS

Not everyone has time for a complete contest and most of us don't have good v.h.f. locations. By becoming a Backpacker you can get round limitations.

The Backpacker events take place over four hours of a larger contest, so there is a welcome boost to activity, with stations busily trying to contact each other and the bigger operations. Of course, the shorter Backpacker's duration means that there is time to get to the top of your local mountain, operate and back down again in one day.

Backpackers' rules place limitations on the height and complexity of antennas, so a couple of people can readily carry a suitable beam with poles, to be assembled at the destination. There are power limits, and all equipment has to be battery operated.

It's a real test of skill when you have to carry all your own gear, get it working on a windy summit, then hunt for other stations on the band. There is no restriction on using cars, but most of the good places to operate are only accessible on foot.

A summary of the dates and times for this year's Backpackers contest is shown in **Fig. 1.** More complete details are available from the RSGB's VHF Contest Committee, at **www.blacksheep.org/vhfcc**. There are variations in the scoring system for each event, which adds an interesting tactical challenge each time. And note that the contest on the 16 June coincides with the popular *Practical Wireless* QRP contest.

● Fig. 1: Backpackers' Contests for the rest of the year.

Date & Time	Band	Multiplier Type
16 June, 0900-1300 (*PW* QRP contest)	144MHz	Country & QTH Locator
7 July, 1100-1500	144MHz	Country & QTH Locator
14 July, 1100-1500	50MHz	Postcode, Country & QTH Locator
28 July, 1100-1500	144MHz	Postcode, Country & QTH Locator
8 September, 1100-1500	144MHz	Country & QTH Locator

WELSH WIZARDS

Roger GW5NF and **Tim G4VXE** always try to enter a few of the Backpackers' contests from several locations in South Wales. Roger told me about their equipment: "We have an FT-290 running 3W, and have recently been running an FT-817 at 5W. We power the rig with a 7Ah battery. We've tried a couple of antennas. A foldable 9-element Yagi worked well, then we stacked another 9-element. We use a 20ft mast, carried in four pieces, with a single set of guys. Rotation is done by hand, so we always make sure the operating position is next to the pole". You can see what he means in **Fig. 2**.

There's a practical limit on gear. Roger continues, "We couldn't carry very much more with two people, since we get the best take-off from a location that we can only get to on foot. It's not too strenuous, although one time we forgot one of the elements for our Yagi and had to scramble back for it. We could have ignored it, and gone on without, except that it was the driven element. We didn't appreciate the extra climb"!

Roger went on to mention items which are essential on a Backpackers' trip. "You need to find some compact folding chairs, and a fishing umbrella will protect you against wind and rain. The weather can play tricks: we were sunburnt on one occasion!" Roger and Tim seem to enjoy contesting greatly and work in relative luxury, as you will see from **Fig. 3**!

Tim explained some of the tactics that help to maximise their contest score. "The format is simple and straightforward, which is very appealing. But you have to operate intelligently, for example, turning the beam after around every four QSOs. Also be aware of when fixed stations are likely to be on and when the 'big guns' are going to be calling CQ. You can build up a good scoring rate by calling them at the right time, and calling CQ yourself after a couple of hours or so. Remember that a Backpackers' station will have plenty of DX potential, because of its location, but probably won't have an overwhelming signal".

Tim's other tips include: "You won't work everyone on the first call, because there will be other strong stations calling as well. It's sometimes better to make a list of stations with beam headings and frequencies, then come back to them a little later. Don't forget the Morse key for the marginal contacts, they become perfectly viable on c.w.

"We have been trying out a Voice Keyer. This is a device that stores pre-recorded

Fig. 2: Roger GW5NF at his operating position, next to the beam.

Fig. 3: Tim G4VXE (left) and GW5NF make some adjustments.

information (CQ calls, for example) and reproduces it when required it's certainly been helpful in saving our voices! If you take a computer, there are programs that work with the sound card to produce the same effect as a Voice Keyer".

FURTHER AFIELD

If climbing a mountain to enter a contest is not to your taste, consider what radio gear you might be able to take with you when away from home on holiday. **David G8ZRE**, has travelled quite extensively on 'DX Holidays' and he often manages to fit in some radio.

David has these tales to tell: "The first time I operated in 'foreign' lands was in Jersey on holiday with my wife and three children. We travelled by car and ferry from Weymouth and there was not much room left for Amateur Radio gear - just the rig and the 5l8 whip. I worked the Jersey Radio Society during the *PW* contest and I was hooked!".

It was a great introduction, and David continues: "I found an excellent site on the north coast of Jersey, at just about the highest point on the island. The take-off to the UK was very good.

So, I left my family on the beach directly below and drove up Bouley Bay Hill. I was able to play radio, keeping an eye on the weather so if it rained I could drive down to the beach to pick my family up! On later visits to Jersey I managed to squeeze an HB9CV in the boot, and got better results". You can see the sort of equipment David uses in **Fig. 4**.

David has taken equipment by plane as well. "I've operated from Spain several times too, taking 50 & 144MHz rigs to Majorca. From the third floor of a hotel in Palma Nova I had to find a way of supporting my HB9CV. There hadn't been room to take a pole on the plane, so I had to improvise.

"One of the local fiestas had just taken place and there were discarded cardboard mortar tubes used for launching fireworks, lying on the beach. I gathered up several sections, getting some very strange looks! Back on the balcony I slotted the tubes together. Bingo, I'd just created a 10ft mast, which I strapped to the balcony rail".

A note of caution here, David mentions that he set up some extra guying, as a safety strap in case his makeshift arrangement failed. With people wandering around below, you can't take chances. It also goes without saying that you must ask permission before setting up any external antennas in a hotel. You'll rarely be refused, but it's a courtesy that will bring a lot of goodwill.

TRAVEL TIPS

Many of **G8ZRE**'s DX destinations have been reached by air and David has some hints for negotiating security procedures. Most airline employees have no idea what Amateur Radio is all about and can be suspicious of strange equipment. Don't get too upset, they are doing a difficult job and are trying to identify possible problems without really knowing what might crop up next.

Fig. 4: David G8ZRE manages to squeeze in his radio gear as well as the family!

David says, "Always take your current radio licence with you, so that you have some proof of what you are up to. You could be stopped by Customs' Officials, so you might want to take receipts for gear. Be prepared to explain how gear interconnects, particularly in your hand baggage, On several occasions I have given a mini-lecture on Amateur Radio to Manchester airport security officers. Perhaps they will be interested enough to become Radio Amateurs themselves one day! Oh, and don't forget take a converter, so that your UK plugs will work abroad".

David has more suggestions: "Put all tools, cutters, screwdrivers etc., in your main checked baggage. This also applies to humble cable straps that you use for securing a mast to the hotel balcony. They can be seen as a handcuff device and will probably be confiscated.

"Check with the airline to see if equipment such as transceivers can be carried and always tell the clerk at check-in what is in your bag, in case it is x-rayed and you get a call to go back and explain. I noted last year that some airlines have a strict allowance for 'carry-ons', which can be as low as 5Kg, particularly with budget airlines".

I'm not sure I agree about asking the airline if certain items can be carried. By doing so you give them the opportunity to say 'no', whereas you cannot be criticised for checking in something which is not on their list of prohibited items. However, David has a suggestion for adding to what can be carried on board. "I recommend a large bum bag, which can carry a surprising amount and dare I say the word 'anorak'. Wear a lightweight summer anorak, with plenty of pockets and you can stuff them with heavier items to keep the weight down in your hand baggage". Try these suggestions at your own risk, I've used some myself, but be reasonable!

David rounds-off with a cautionary tale: "While travelling from Birmingham to Almeria, an over-enthusiastic security man insisted that my 144MHz hand-held could not be allowed onto the aircraft. I pointed out that the battery pack was disconnected and every one else was boarding with mobile phones, but to no avail.

"I was told my radio would be placed in a bag and stored on the aircraft in a secure locker. On arrival I was told to go to a small hatch, but there was no radio!

"I returned to the carousel to collect the cases and to my amazement the last item off the aircraft was the rig, in a Britannia duty-free plastic carrier bag. It came up the rollers and dropped a foot onto the carousel. When I picked it up it was like a block of ice! I thought this would certainly test the manufacturer's specifications, but after an hour it had warmed up, the condensation had disappeared, and yes, it worked fine!".

LAST WORDS

Thank you to GW5NF, G4VXE and G8ZRE for their help, and permission to use photographs. Please keep writing about your DX Holiday experiences. The deadline for the October issue is the middle of July.

73. Ed G3S2X

Trader's Table

Disclaimer

Advertisements from traders for equipment that is illegal to possess, use or which cannot be licensed in the U.K. will not be accepted. While the publishers will give whatever assistance they can to readers or buyers having complaints, under no circumstance will the magazine accept liability for non-receipt of goods ordered, late delivery or faults in manufacture.

THE SHORTWAVE SHOP

01202 490099

TRANSCEIVERS

ICOM 706 Mk1. HF/6M/2M TCVR	£425
ICOM IC725 HF TRANSCEIVER	£295
ICOM Q7 VHF/UHF TRANSCEIVER	£95
ICOM 746 HF/6Mtr/Mtr TRANSCEIVER	£795
YAESU FT790R 70cms TCVR	155
YAESU FT980 HF TRANSCEIVER	£495
YEASU FT2700 VHF-UHF MOBILE TCVR	£175
KENWOOD TS940S HF TCVR	£695
KENWOOD TS440SAT HF TCVR	£475
KENWOOD TS430S HF TCVR	£425
KENWOOD TS530S HF TCVR	£225
KENWOOD TS50S HF TCVR + AT50 ATU	£525
KENWOOD TMD700E VHF/UHF MOBILE	£299
KENWOOD 9130 VHF MULTIMODE	£225
KENWOOD TM231E VHF MOBILE	£99
KENWOOD TS700S VHF MULTIMODE	£185
KENWOOD TS770 VHF UHF MULTIMODE	£295
ALINCO DR 140 VHF MOBILE TCVR	£95
KENWOOD TS701 VHF UHF MOBILE	£325
ADI 200 VHF H/H TRANSCEIVER	£75

RECEIVERS

ICOM IC7100 VHF UHF RCVR + HF	£475
ICOM PCR 100 PC RECEIVER	£125
ICOM PCR 1000 PC RECEIVER	£225
ICOM R71E HF RECEIVER	£395
AKD HF3 HF RECEIVER	£99
NRD JRC 515 HF RECEIVER with memory Unit,Keypad and NRD Speaker	£895
NRD JRC 345 HF RECEIVER	£255
NRD JRC 525 HF RECEIVER	£375
KENWOOD R5000 HF RECEIVER	£475
KENWOOD R600 HF RECEIVER	£185
AOR AR5000 HF VHF UHF RECEIVER	£895
AOR AR3000 HF VHF UHF RECEIVER	£395
AOR AR7030 HF RECEIVER	£350
AOR AR2700 WIDE BAND H/H RCVR	£135
AOR AR8000 H/H RX + PC INTERFACE	£195
YUPITERU MVT7300 H/H RCVR	£185
YAESU FRG7000 RECEIVER	£125
YAESU FRG100 RECEIVER inc PSU	£295
YAESU VR500 WIDE BAND H/H RCVR	£145
YAESU FRG 7000 HF RECEIVER	£125
YAESU FRG 7 HF RECEIVER	£95
FAIRHAVEN VX500 RADIO DATABASE	£499
HITACHI WS1000 WORLDSPACE RCVR	£99
R216 MILITARY RCVR with PSU UNIT	£225
REALISTC DX394 HF RECEIVER	£95

ACCESSORIES

KENWOOD SP430 SPEAKER	£45
KENWOOD AT130 ANTENNA TUNER	£125
PACKRATT PK232MBX MODEM	£95
YAESU FTV107R VHF TRANSVERTER	£99
SPECTRUM 10-4MTR TRANSVERTER	£95
AMERITON AL811 600W. HF AMPLIFIER	£495
AOR CC8200 PROGRAMME KIT	£65
SPECTRUM 10-6MTR TRANSVERTER	£95
WATSON SUPER SEARCHER COUNTER	£65
MFJ 9593 ACTIVE ANTENNA UNIT	£85
TIMEWAVE DSP59PLUS DSP UNIT	£89
RF SYSTEMS SP2 HF ANT SPLITTER	£55
KENWOOD HS5 PHONES	£30
TINY 2 PACKET TNC	£95
YAESU AT757 AUTO ANTENNA TUNER	£125
NRD ECSS BOARD FOR NRD535	£95
NRD RTTY BOARD FOR NRD 525/535	£95
NRD RTTY TUNING INDICATOR UNIT	£35
ICOM SP21 SPEAKER	£59

NEVADA

023-9231 3090

ALINCO DJ-580E 2M/70CM HANDHELD	£129.00
ALINCO DJ-SR1 PMR 446 TRANSCEIVER	£79.00
ALINCO DR-140E 2M MOBILE TRANSCEIVER	£159.00
ALINCO DR-430E 70CM MOBILE TRANSCEIVER	£169.00
ALINCO DR-610E 2M/70CM MOBILE TRANSCEIVER	£225.00
KENWOOD TM-231E 2M FM MOBILE TRANSCEIVER	£189.00
KENWOOD TM-D700E 2M/70CM MOBILE+APRS	£329.00
KENWOOD TS-790E+PS31 2M/70CM BASE STATION	£1195.00
STANDARD C558+ACC 2M/70CM HANDHELD	£165.00
TRIO TR-7500 2M FM 10W TRANSCEIVER	£105.00
TRIO TR-7800 2M FM 25W TRANSCEIVER	£149.95
YAESU FT290R 2M MULTIMODE PORTABLE	£159.00
YAESU FT290R2+CASE 2M MULTIMODE PORTABLE	£229.00
YAESU FT290RII 2M MULTIMODE PORTABLE	£225.00
YAESU FT290RII+FL2025 2M MULTIMODE PORTABLE	£258.00
YAESU FT40R 70CM HANDHELD	£119.00
YAESU FT470 + ACC 2M/70CM HANDH + MOB ADPT CASE	£139.00
YAESU FT-90R 2M/70CM MOBILE TRANSCEIVER	£265.00
YAESU FTL2014 VHF PMR TRANSCEIVER	£75.00
AOR AR8200-2 HANDHELD SCANNER	£275.00
MAYCOM AR108 HANDHELD SCANNER	£55.00
REALISTIC PRO 2026 MOBILE SCANNING RECEIVER	£99.00
YUPITERU MVT6900H HANDHELD SCANNER	£275.00
AOR AR8600+PSU WIDEBAND RECEIVER	£549.00
ICOM ICR-7000 WIDEBAND RECEIVER	£599.00
ICOM IC-R7000+REMCONT WIDEBAND RECEIVER	£495.00
ICOM IC-R75 HF RECEIVER	£499.00
ICOM PCR-1000 COMPUTER BASED RECEIVER	£249.00
LOWE HF225 EUROPA HF RECEIVER	£375.00
LOWE HF225 +CASE,PM & K PADSF RECEIVER + ACC	£529.00
ROBERTS R827 SHORTWAVE RECEIVER	£99.00
YAESU VR-5000+DSP WIDEBAND RECEIVER	£529.00
ICOM IC-706II + DSP HF-2M TRANSCEIVER	£599.00
ICOM IC751A 100 W HF TRANSCEIVER	£599.00
ICOM IC-756 PRO HF/6M 100W TRANSCEIVER+DSP	£1399.00
ICOM IC-775DSP 150W HF BASE TRANSCEIVER	£1895.00
KENWOOD TS-850S 150W HF BASE TRANSCEIVER	£999.00
YAESU FT890 100W HF TRANSCEIVER	£575.00
YAESU FT-900 100W HF TRANSCEIVER	£499.00
AKD WA1 VHF/UHF WAVE METER	£19.00
ALINCO EDC-91 FAST CHARGER DJ-V5	£32.00
BENCHER PADDLE KEY DUAL PADDLE KEY	£64.75
DAIWA LA-2080H 2M 80W AMPLIFIER+PREAMP	£95.00
ICOM BC-135 BASE CHARGER UNIT	£29.95
ICOM IC-AT500 AUTO ANTENNA TUNER	£299.00
KENWOOD VS-2 VOICE BOARD	£40.00
KENWOOD YK88-SN 2.4KHZ SSB FILTER TS450/850	£40.00
LOGIKEY K3 ELECTRONIC MEMORY KEYER UNIT	£39.00
M W MODS MM40HXB MW MODS RTTY RX/TX INC KB	£40.00
MFJ-447 ELECTRONIC MEMORY KEYER UNIT	£38.00
NISSEI XCD-308 BASE MICROPHONE (8 PIN YAESU)	£39.95
OPTO SCOUT 40 FREQUENCY COUNTER	£209.00
PALSTAR AA-30 ACTIVE ANTENNA TUNER	£45.00
PALSTAR AT1500 ANTENNA TUNER 1500W PEP	£249.00
PALSTAR AT-300 ANTENNA TUNER	£79.00
PALSTAR PS 30M 25-30A POWER SUPPLY	£75.00
TIMEWAVE DSP599ZX ALL MODE DSP UNIT	£299.00
TOKYO HL100B/2I-2B LINEAR AMP 10-100W 21-28MHZ	£129.00
WARE 1-TOUCH TUNER QTT UNIT FOR FT-817	£49.95
WATSON W432 RX ANTENNA TUNER	£29.95
WATSON WPK2 PRECLECTOR	£29.95
WATSON WRSH-4DCADAPT VHF/UHF RX TESTER	£59.00
WELTZ SP-400 VHF/UHF POWER METER	£65.00
WESTERN PM-2000 HF PEP POWER/SWR METER	£35.00
YAESU HF232C VAN COMPUTER INTERFACE (FT736)	£50.00
YAESU FL2050 2M 50W LINEAR AMP	£50.00
YAESU NC-37 DESK CHARGER FT-470,FT23 ETC	£29.00

PLEASE CHECK OUR WEB SITE FOR LATEST ITEMS AVAILABLE

www.nevada.co.uk

SOUTH EAST COMMUNICATIONS

00353 51 871278

STATION ACCESSORIES

Revex WS40 2m/70cm SWR/PWR meter	£49
Paccomm Spirit2 9600 baud TNC	£99
Watson 30-35amp PSU with meters	£89
MFJ941D 300 watt mobile ATU	£79
Yaesu MD100AX desk mic 1000mp etc	£79
Bird watt meter with 6 elements	£199
Garmin GPS3 hand held GPS with Europe maps	£249
Datong FL-3 multimode filter	£99
Watson WMM-3 multimode data decoder	£45
Garmin Etrex hand held GPS	£109
Icom SP-21 speaker	£60
Kenwood SP-23 speaker for TS450	£49

VHF/UHF TRANSCEIVERS

Uniden MC1010 marine VHF 25w transceiver new	£129
Alinco DJV5 2m/70cm hand held dual display	£189
Kenwood TMG707E 2m/70cm	£239
Yaesu FT1500M 2 meter 50 watt mobile new	£159
Icom ICT8E 6, 2, 70cm handheld mint	£199
Kenwood TS790 2m/70cm base all mode	£899
Alinco DR610 2m/70cm 50w mobile dualbander	£299
Icom IC275H 25watt multi mode	£549
Yaesu FT3000 70w 2m mobile wide Rx	£199
Kenwood TR751E 2m 25watt multimode mobile	£349
Kenwood THD7E version 2 2m/70cm mint	£199

HF TRANSCEIVERS

Yaesu FT990DC auto ATU boxed mint	£799
President Lincoln 10m Amateur transceiver new	£199
Icom IC738 auto ATU 100watt all mode mint	£699
Yaesu FT1000mp/ac boxed mint DSP ATU	£1399
Icom IC746 HF+6+2m 100watt Auto ATU	£949
Kenwood/Trio TS120 100 watt transceiver	£249
Kenwood TS50 0-30mhz 100w all mode mobile	£399
Icom IC736 HF+6m 100 watt PSU auto ATU	£749
Yaesu FT1000mp/ac top of the range DSP etc	£1299
Icom IC728 base rig all mode 100watt	£419
Icom IC706 mk2 HF+6+2m all mode	£599

SHORTWAVE RECEIVERS

Icom ICR8500 0-2000mhz	£949
Hitachi worldspace satellite RX for radio stations	£149
Sangean 909ATS shortwave portable+VHF mint	£119
Sony SW77 shortwave portable +VHF mint	£249
Kenwood R5000 with VHF converter	£599
Lowe HF150 0-30mhz all mode	£249
Lowe HF250E remote control	£339
Icom IC-R75 0-30mhz latest receiver DSP	£499

SCANNERS BASE/MOBILES

AOR 8000 0-1900mhz all mode RX boxed	£199
Icom PCR-1000 0-1300mhz computer RX	£249
Uniden Bearcat 220XLT 66-956mhz	£119
Bearcat 9000XLT base 25-1300mhz as new	£199
Icom IC7100 25-2000mhz all mode base	£599
AOR5000 0-2600mhz all mode save £500 now	£999
Icom ICR10 500khz-1300mhz all mode H/H nicads	£199
Realistic PRO2006 base 400mem 25-1300mhz	£149
Bearcat 760XLT base/mobile	£169
Alinco DJX3 0-1300mhz handi	£99
Icom ICR8500 0-2000mhz all mode	£949
AOR 3000A 0-2036mhz all mode	£499
Alinco DJX10E full coverage all mode	£249
Yaesu VR5000 Demo model	£499

All prices in Sterling

WATERS & STANTON

01702 206835

HF TRANSCEIVERS

Icom IC-575A 10m, 6m 10W Base Transceiver Mains	£399
Icom IC-746 HF,6m,2m All Mode Base with Gen.Cov	£999
Kenwood TS-570D Base with Gen. Cov. + ATU & DSP audio filter 12V	£599
Kenwood TS-680S HF,6m All Mode Base with Gen.Cov. 12V	£549
Kenwood TS-850S Base Transceiver with Gen.Cov. 12V	£699
MFJ MFJ-9020 20m CW QRP 5W Transceiver 12V	£115
Mizuho MX-3 3.5S 80m SSB / CW, 2W Handheld	£149
Yaesu FT-100 HF,6m,2m,70cm All Mode with Gen.Cov.	£849
Yaesu FT-757GX Base Transceiver with Gen.Cov. 12V + FC-757AT ato	£449
Yaesu FT-920 HF,6m All Mode Base with Gen.Cov.12v	£899

VHF/UHF BASE/MOBILE TRANSCEIVER

ADI AR-446 70cm FM Mobile 35W	£199
AKD 2001 x3 2m FM Mobile Channelised 25W	£119
AKD 7003 70cm FM Mobile Channelised 5W	£125
Alinco DR-M06TH 6m FM Mobile 10W CTCSS	£159
Icom IC-910H 2m,70cm All Mode Base 100W, 75W 12V	£899
Icom IC-2100H 2m FM Mobile 55W	£169
Kenwood TM-251E 2m FM Mobile 50W	£239
Kenwood TR-751E x2 2m All Mode Mobile/Base 25W	£349
Yaesu FT-225RD 2m All Mode Base 25W with Mutek Mains/12V	£599
Yaesu FT-290R 2m All Mode Portable 2.5W	£159
Yaesu FT-290R II x4 2m All Mode Portable 2.5W	£249
Yaesu FT-690R II 6m All Mode Portable 2.5W	£249
Yaesu FT-790R II 70cm All Mode Portable 2.5W	£249
Yaesu FT-2500M 2m FM Mil. Spec. Mobile 50W	£169
Yaesu FT-5200 x3 2m,70cm FM Mobile 50W,35W	£225

VHF/UHF HAND HELD TRANSCEIVER

ADI AT-201 2m FM Battery box 130-170MHz RX	£99
ADI AT-400 70cm FM Battery box 420-465MHz RX	£115
ADI AT-600 2m,70cm FM H/Held,Wide RX,Full Duplex	£175
ADI Sender 145 2m FM H/Held with Battery box	£95
Alinco DJ-180 2m FM H/Held	£89
Alinco DJ-580 2m/70cm FM H/Held Full Duplex Airband RX	£145
Alinco DJ-G5 2m/70cm FM with wide RX	£169
Icom IC-25ET 2m FM H/Held	£99
Icom IC-A2E Civil Airband H/Held Transceiver	£199
Icom IC-P2ET 2m FM H/Held	£89
Icom IC-T7E 2m/70cm FM with wide RX	£199
Icom IC-T22A 2m FM H/Held	£119
Kenwood TH-D7E 2m,70cm FM Palm Held with Wide RX and TNC	£249
Standard C-108 x2 2m FM H/Held	£89
Yaesu FT-41R x2 70cm FM Handy with Wide RX	£99

SHORTWAVE RECEIVERS

Grundig YB-400PE Portable Receiver with FM stereo and SSB	£89
JRC NRD-525 90kHz-34MHz All Mode Receiver 200Ch. Mains	£529
Kenwood R-5000 100kHz-30MHz All Mode Receiver Mains	£499
Lowe HF-150 30kHz-30MHz All Mode 12V	£199
Lowe HF-225 30kHz-30MHz All Mode Receiver 12V	£249
Lowe HF-250 30kHz-30MHz Receiver 12V PC Compatable	£325
Roberts R-809 Portable 153kHz-30MHz AM,FM stereo	£59
Sony ICF-SW100E Pocket Receiver with FM stereo and SSB	£115
Sony ICF-SW7600D Portable Receiver with FM stereo and SSB	£79
Yaesu FRG-100 50kHz-30MHz AM,CW,SSB 12V with PSU	£325

SCANNERS MOBILE/BASE

Yaesu VR-5000 100kHz-2600MHz All Mode Receiver 2000Ch. 12V £399

SCANNERS HAND HELD

Alinco DJ-X10 100kHz-2000MHz All Mode 1200Ch	£199
AOR AR-8000 x4 500kHz-1300MHz All Mode 1000Ch	£199
AOR AR-8200 H x2 530kHz-2040MHz All Mode 1000Ch	£299
Stenpletone SAB-2000 MW,FM,Airband,Marine Digital Radio	£35

STATION ACCESSORIES

AEA PK-232MBX PakRat Multimode Data Controller	£185
AEA PK-900 Simultaneous Dual Port TNC	£299
AKD WA-2 50-210MHz VHF Wavemeter	£25
Ameritron ALS-600XCE 10-160m Solid State 600W Amplifier	£899
AOR SDU-5000 Spectrum Display Unit for Receivers	£249
BNOS LPM-144-10-100 2m Linear Amp 10W in , 100W out with Preamp	£139
Daiwa LA-2080H 2m 1-5W in,80W out + GaAsFET Pre-amp	£99
Datong FL-3 Multimode Filter with Auto Notch	£99
Diamond GSV-4000 12V variable 40A Regulated PSU with meters	£109
Diamond SX-100 1.6-90MHZ SWR,PWR meter 3kW	£69
ICS AMT-3 RTTY,AMTOR & CW Terminal (P.Sale)	£50
ICS FAX-1 Weather Fax , NAVTEX , RTTY Decoder	£125
Icom PS-85 13.8V 20A Matching PSU	£179
Icom SP-3 Matching Extension Speaker	£39
JPS NIR-10 Noise / Interference Reduction Unit	£190
JPS NTR-1 DSP Noise Reducer	£99
Kantronics KAM Plus Multimode Data Controller with Pactor, Dual Port	£199
Kenwood DSP-100 Matching Digital Signal Processor for TS-850	£199
Kenwood VC-H1 Visual Communicator,Colour LCD , SSTV	£169
MFJ MFJ-247 1.8-30MHz Digital SWR Analyser	£129
MFJ MFJ-411 Personal Morse Tutor	£45
MFJ MFJ-452 CW Keyboard + Perpetual Memory 2 Line 16 character	£99
MFJ MFJ-462B RTTY,ASCII,CW,AMTOR Reader with Display	£119
MFJ MFJ-1020A 0-30MHz Indoor Active SWL Antenna	£65
MFJ MFJ-1274 HF / VHF TNC + 1284M software (P.Sale)	£100
MFJ MFJ-1278RX Multimode 10 mode Data Controller with Pactor	£225
MFJ MFJ-1289M IBM Multimode Control Software	£49
MFJ MFJ-1289W IBM Multimode Control Software for Windows	£49
MFJ MFJ-1610 Theory Tutor (Novice)	£4
Microset R-50 2m 1-7W in,50W out all mode + GaAsFET Pre-amp	£59
M.Modules MMC-144-28 2m Frequency Converter 28MHz IF	£10
Opto 3000A + 10Hz-3GHz Frequency Counter	£289
Opto Micro-RF Pager sized micro RF Detector	£69
PacComm Pico-2 Miniature 1200 Baud Dual Port Packet Modem	£149
Standard P-335 2m Amp 3W in , 30W out	£39
Timewave DSP-9+ Audio Noise Filter with Gain Control	£129
Timewave DSP-599ZX Audio Noise Reduction Unit	£149
Watson W-5A 12V Fixed 5A PSU	£20
Watson WDB-30 2m, 70cm Dualband Amplifier 35W out, 6W in	£99
Watson WMM-1 Multimode Modem	£49
Yaesu FL-2025 x2 2m clip-on 25W Linear (for FT-290R II)	£99
Yaesu MD-1B8 Desk Mic 1.3k/800ohm	£69

MISCELLANEOUS

Albrecht AE-2850 40ch 4w CEPT Hand Held	£50
Garmin GPS-12CX Hand held 12Ch. 500 Waypoints with 4 colour screen	£179
Garmin GPS-III + 12Ch. 500 Waypoints,BackTrack with MAP	£249

TUNE-IN

TOM WALTERS
P.O. BOX 4440
WALTON
ESSEX
CO14 8BX

E-mail: tom.walters@aib.org.uk

TOM WALTERS HAS GOOD & BAD NEWS OF SEVERAL STATIONS ON THE HF BROADCAST BANDS THIS MONTH

We start this month with good and bad news about religious broadcasters. The not so good news is that international Christian broadcaster the World Beacon suspended transmissions on 15 April.

The Beacon had been doing well in Africa, so why have the plugs suddenly been pulled? It seems the trouble is with the clients of parent company the Affiliated Media Group (AMG), are more interested in domestic audiences than international. Surely they could have thought of this sooner?

The good news comes from HCJB World Radio, which is planning to build one of Australia's first private international radio transmission sites. The site will be at Kununurra, in North Western Australia, and work is planned to start next December. A 100kW short wave transmitter and a curtain antenna on 37 metre high towers will be used.

The HCJB Christian programming will reach across vast areas of the South Pacific and Asia. Initial programming will consist of two five-hour blocks of English programs to the South Pacific and India. (Extra languages will be added later).

The current HCJB English short wave schedule is: Americas: 0100-0600, on 9.745, 11.960: 0100-0600 on 21.455 u.s.b. world-wide; 1100-1430 on 15.115, 12.005 and 1100-1430 on 21.455MHz u.s.b. world-wide. Europe at 0600-0800 on 11.680; 2000-2200 on 17.660. South Pacific at 0700-1100 on 11.755, and 21.455 u.s.b. world-wide and India at 0200-0330 on 21.470MHz.

At the time of writing, it seemed that the US military was maintaining its broadcasts to Afghanistan. There have been continuing reports from short wave listeners of transmissions on 8.700MHz.

There are also reports of transmissions on medium wave 980kHz. Broadcasts are believed to be humanitarian and informative and to be provided by a system used by US Army Psychological Operations (Psyops) units. Special radios distributed by the Americans enable the Afghan population to hear the broadcasts.

WORLD SERVICE INTERNET

Meanwhile, BBC World Service has launched an internet site in Pashto **http://www.bbc.co.uk/pashto/index.shtml** for Pashto speakers from Afghanistan, Pakistan and the diaspora. The new site, which employs a specially commissioned Pashto script, has been warmly greeted by the leader of Afghanistan's interim government, **Hamed Karzai**, who said: "Afghans listen to BBC Pashto Service with great keenness... BBC Pashto Service has many listeners". So that's one up for short wave!

The BBC World Service has the largest audience of any international or local broadcaster in Afghanistan. Pashto broadcasts are heard by Pashto speakers in Afghanistan, Pakistan and India and by Afghan refugees scattered in Iran, the USA, Australia, Canada and Europe by 23 years of war.

Chris Westcott, head of BBC World Service New Media, said: "BBCPashto.com is the latest example of our commitment to building world class websites in key languages and follows on from developments in our Persian, Hindi and Urdu sites".

SERVICE EXPANDED

Deutsche Welle's Ukrainian service is being expanded. Their half hour current affairs programme, previously broadcast Mondays to Fridays, at 1930 local time will now be stepped up to seven days a week. Reception is possible by short and medium wave as well as by f.m. frequencies across the country.

The Arabic service from DW is also being re-jigged. For full details of DW programmes E-mail **tb@dw-world.de** or **Tel: +49 221 389 3028, FAX: +49 221389 3220** alternatively look at their website at: **www.dw-world.de**

While we're in the Arabic world, the **VOA**'s new Middle East Radio Network (unsurprisingly if rather boringly know as MERN), and confusingly known as Radio Sawa in the region, is also stepping up programming, by adding news programmes. As with so many international operations nowadays, there won't be anything to be heard on short or medium wave, because it's all being done by f.m. relay and satellite transmission.

Jakada Radio is a commercial station which appears to have strong African connections.

Increasingly, where possible, the big broadcasters are striking agreements with local stations to carry their programmes. This makes it far easier for the listeners to hear, but of course there's no way of intercepting transmissions on their way to the target area.

There is a chance however, of hearing a new one-hour weekly programme for Ethiopia and Eritrea. It is to be broadcast by the United Nations Mission in Ethiopia and Eritrea and will be broadcast in four languages including English.

Short wave transmission will be from the United Arab Emirates, and the times to listen are: Tuesdays: 0430-0530 on 15.215 and Fridays on 13.750MHz. In line with current practice, there is also the possibility of listening via satellite to the programmes, via WorldSpace International.

JAKADA RADIO

Jakada Radio appears to be a commercial station and can probably be heard on Mondays, Wednesdays and Fridays 1900-1930 on 12.125MHz. More information can be gleaned from the Internet by looking up **http://www.airtime.be**

Jakada has offices in London, Madrid and Frankfurt, and appears to have strong African connections. It claims a pool of international correspondents around the globe, with bureaus in Cairo, Accra, Washington and Harare.

Jakada Radio International say: "We are a non-religious, non-political, commercial radio station. We do not represent any political or ideological tendencies or manifestations. We are committed to fundamental human rights, democracy, rule of law and pluralism. Although African in perspective, we are global in our belief and committed to the highest level of radio broadcast professionalism and ethics. We have a team of some of the best Africans, Africans in diaspora and others in radio journalism. We will provide you with News, Sports and Interviews across the African continent and beyond".

Try and pick them up and see what you think. E-mail comments can be addressed direct to Jakada at **jakint2002@yahoo.com**

That's all for this month so until next time have fun tuning that dial!

Bye for now
Tom

SEND YOUR ADVERT TO PRACTICAL WIRELESS, BARGAIN BASEMENT, ARROWSMITH COURT, STATION APPROACH, BROADSTONE, DORSET BH18 8PW

Bargain Basement

For your advert in Bargain Basement please remember to include your dated, coloured corner flash from this page along with your entry.

YOUR ATTENTION PLEASE!

Bargain Basement rules - £4 per advert.

Please write your advert **clearly** in **BLOCK CAPITALS** up to a maximum of **30 words**, plus **12 words f**or your contact details on the form provided and send it together with the dated corner flash and your **payment of £4** (**subscribers** can place their advert **free of charge** as long as they provide their **subs number and corner flash**), cheques should be made payable to **PW Publishing Ltd**, credit card payments also accepted.

Send your advert to **Bargain Basement, Practical Wireless, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW** or E-mail your advert to **donna@pwpublishing.ltd.uk** (If you don't want to include your credit card details on your E-mail, just 'phone us on **(01202) 659910**).

Please help us to help you by preparing your advert carefully. Any advert which contains **??** marks indicates that the Editorial staff could not read/interpret the wording.

Please avoid FAXing your advert - it could delay publication.

Advertisements from traders (or suspect traders) or for equipment that it is illegal to possess, use or which cannot be licensed in the UK, will not be accepted. **No responsibility will be taken for errors and no correspondence will be entered into on any decision taken by the Editor on any of these conditions.** You should state clearly in your advert whether equipment is professionally built, home-brewed or modified. The Publishers of *Practical Wireless* also wish to point out that it is the responsibility of the buyer to ascertain the suitability of goods offered for purchase.

FOR SALE

Alinco 6m (50MHz) f.m. one year old used once,boxed, no mounting bracket, mint condition, new £249 sell for £200. Mr. M Williams, 37 Gleton Avenue, Hove, East Sussex BN3 8LN. Tel: (01273) 880287.

AOR R5000 2.6GHz base, mint, boxed, £950 and AOR AR3000A 2GHz base, mint, boxed, £300 both carriage paid. Tel: (01743) 884858.

Books over 400. Lifetime's collection (some very rare) from 1900 to 1980. Booklets from £2 each all on radio, electronics, valves, Amateur handbooks, etc., ideal for collectors. Tel: (01872) 862291.

CB items; sale/exchange/swap (w.h.y.?). 27/81 units, £10-£40. 4A p.s.u.s, £10. SWRs, £4. 2-ways, £4. M/mounts, £5-£10. Hand-helds + batts & charger, £25. Antennas, £5-£10. Complete station, £50. Postage at cost! Tel: (01986) 896658 or E-mail: ozone3radio@hotmail.com

Classic Kenwood TS, boxed, manual, microphone, very good condition, buyer collects, £300. Tel: (01536) 519690 after 6pm.

Collectors set Hallicrafters S-38C general coverage 540-32000kHz in good working order, very clean condition, 240V, £50. Tel: Plymouth (01752) 343074.

FT-101B, £100. KW1000 linear amp, £150. Buyer to inspect and collect. Stan G3MEA, Morpeth. Tel: (01670) 503525.

FT-101Z h.f. transceiver with digital read-out, £150. Morse keys: RAF typeB, £40; Eddystone Bug, £25; Twin paddle, £20. Analogue multimeters: Pullin, £10; AVO model 40, £15 (Silent key sale - G3HCX). Walter G3ESP, Ponefract. Tel: (01977) 611229. E-mail: avlona1@supanet.com

Hand-held Icom IC-W2E dual-band, ext RX, complete with spkr/mic, in car hands free, demo/deliver in South Eas, £100. Tel: Steve on (01189) 672081.

Heathkit lab oscilloscope Model 0.12U, fully operational. 5in diameter tube, 500kcs, t/b. 12VAR, controls, bargain, £35. Tel: 0208 954 2750.

HRO500, SP600, AR88D, SX28A, CR100, 1990R/53, 990s, HRO-5m and more for sale on my website at www.nomis.co.uk/m5poo Please take a look! Tel: Simon on (01434) 633913 or E-mail: simon@nomis.co.uk

Hustler 4-BTV vertical, excellent performer, as new condition, reason for sale, buying mast and beam, £95. buyer collects or pays carriage. Mike, Durham. Tel: 0191-389 2822 or (07958) 049026.

Icom IC-725 h.f. 100W, £325. Icom IC-2IIE 144MHz, multi-mode mains/12V basestation, £160. Trio TR-9000 144MHz 12V-10W mulit-mode mobile, £130. New boxed p.a./driver valves, for FT-101Z etc., 6146Bs, £25. Tel: Mick G4ITF on 0239-238 6184 or write c/o G3VEF, QTHR.

KW2000E h.f. transceiver, p.s.u. and original Shure 201 microphone, excellent condition, spare set of valves, £200. Shure 444 microphone £45. Tel: West Sussex/Surrey/Hampshire borders (01428) 658497 or E-mail: g0xtl@tesco.net

Linear Amp UK Explorer 1200, WARC, Soft start, v.g.c., £850, buyer collects or pays carriage. (G4CKH could swap above for FT-1000MPDC with cash adjust). Tel: Nr. Lowestoft (01502) 740965 or E-mail: graeme@g4ckh.fsnet.co.uk

Maspro 2m (144MHz) 5-ele beam, £17.50. Nine element beam, 70cms (430MHz), £15. Both new. Buyer to collect. Aiwa CD player as new, £45. Tel: London 0208-785 7314.

Microset 144/200 amp, £160. Diamond SX200, £35. Welz SP425 remote sensor, £65. MC85 mic, £60. IC-728, £29. IC-AT160 auto a.t.u., £135. TS-950SDX f/panel, £35. S/manuals TS-180S, IC-R7000, FRG-7700, £20. Wanted h.f./amp. Tel: Norfolk: (01953) 884305 or (07970) 214039.

Power amplifier with integral Lectern, 2 mics plus lapel mic and tx, padded cover, mains or rechargeable battery, hardly used cost, £2100 offers, £950 seen at Attleboro, Norfolk. Mr Cressey, Frinton on Sea. Tel: (01255) 672884.

RA17N, £140. FT-101ZDIII, £300. FT-101, £125. FT-200, £150. TS-930S MC80, manual, all filters inc. 500kcs, c.w., £350. Yaesu evt/ls, mint, £35. FT-221R, £300. FC-102, 360. FC-902, £110. TS-430 est/ls, mint. mic, £275. Tel: Ben on (01398) 361215 after 6pm or weekends.

Racal 1772 with handbook, joystick, antenna with Joymatch a.t.u, At-1000 a.t.u., Eddystone 898 dial, Wellbrook active loop, want Marconi Marine *Oceanic* receiver any condition but complete. Tony, Worcester. Tel: (01905) 641759.

Racals: RA17 MkII, RA117C2. Eddystones: 680x, EB35. Army R107 PCR no 3MkI/II. All in excellent order c/w manuals. Clark PU12 mast complete. Racal 8m mast complete in new condition. Phone for details. Jim, Poole, Dorset. Tel: (01202) 668446.

Receiver AKD HF-35 30kHz, 30MHz u.s.b., a.m., l.s.b. signal strength meter, Slow Scan television, weather, fax, bought 18/2/02, manual, boxed used once, £100 including postage, all complete o.n.o. Tel: John on (01634) 401472.

Steel six ft radio rack with doors, professional built, very heavy, £75. Wanted RA17 or good AR88 l.f. Tel: (01538) 385735.

Tait T1999 ex-p.m.r., tunes perfectly, 4m (70MHz) band, 25W, clean f.m., six channels possible, tuned, modified two channels, £39. Set fully tested only £10.50 ring for details, 25 sets available. Les G3CON. Tel: (01527) 854245 anytime.

Trio Kenwood R2000 communications receiver good condition with v.h.f. convertor, plus l.s.b., u.s.b., a.m., f.m., c.w., airband 2m (144MHz) etc with manual, only £280 includes carriage. Tel: (01608) 665055.

Trio R2000 with v.h.f. convertor, plus c.w., a.m, f.m., u.s.b., l.s.b. Great short wave receiver only, £300 includes postage also pocket airband receiver, new only £20 includes postage. Tel: (01608) 662488.

Trio TR-7800 2m (144MHz) mobile transceiver, £90. Icom IC-505 6m (50MHz) portable transceiver, £100. Albrecht AE550 2m mobile transceiver, £50. Jane, Eastbourne, East Sussex. Tel: (01323) 723965.

Bargain Basement

Trio TS-830S new p.a. valves and check by Lowe/E (12/03/02) fully up to spec. c.w. filter, £395 or exchange for valved transceiver g.w.o. pref with c.w. filter, cash adjustment. G3PJN, Chesterfield. Tel: (01246) 566040.

TS-7111E all-mode 2m (144MHz) 25W TX/RX mint condition SP-430 speaker manual. MC-85 mic, £250. Icom 50/35W 2/70 mobile with ex.leads for desk mic, £175, boxed, manual. John G4WVP, Manchester. Tel: 0161-284 1402.

Two 813 valves bought new never on air, with bases, £60 inc. post. John G3EGC, Bolton. Tel: (01204) 301502.

Vectronics a.t.u. model VC300DLP with owners manual, £40 + P&P. G3WJM, QTHR. Tel: (02780) 893115 or E-mail: G3WJM@bigfoot.com

Wurzel regen radio kit, brand new with instructions, cost £35 will accept £20 including P&P, as advertised in QRP mag *Sprat*. Tel: John on (01634) 401472.

Yaesu FRA 7700 active receiving antenna, £40. RN Electronics transverter, 6m (50MHz) 25W 2m (144MHz) i.f. , £85. Yaesu FT-290RI spares or repairs, £offers. Yaesu MH-12 A2B mic, £10. Tel: Mike on (01530) 461660.

Yaesu FRG-100 h.f receiver cat-system 50kHz ro 30MHz as new, little used and still boxed with power unit and manual plus intnl frequency adn exam manuals, £290. Magellan Skyblazer GPS receive, £120. Tel: (01302) 361190.

Yaesu FT-101Zd, £200. FC700 a.t.u., £100. BNOS 20A p.s.u., £75. G400RC rotator, £150. Buyer collects. Ron G4DVF. Tel: (01843) 864364.

Yaesu FT-2500M 2m (144MHz) 50W f.m. transceiver, CTCSS tones, mi, manual, mobile mount, boxed as new, never used mobile, £120. Tel: (02392) 265101.

Yaesu FT1000MP-AC, narrow filter, MD100-a8x mic. Mint, boxed with manual. £1400. Ameritron 811X linear, 600W output, boxed, manual, £425. Dentron GLA1000 linear 1KW input, works well £220. Trials welcomed. Tel: Jim on 0131-661 4686 or E-mail: GMradioHam@aol.com

Yaesu FT-920 complete with MD100 A8X and Standard H-mic also SP-8 speaker with Watson 25AM power supply units complete with manuals and boxed, £900. Tel: 0207-3593841 or E-mail: les g6oug@lineone.net

PHOTOS

Now's your chance to send in a photograph of your equipment (a good idea if it's really unusual) to accompany your advert. Please note that **all photos** will only be **published at our discretion** and are **non-returnable.**

When sending in your advert, please write **clearly** in **BLOCK CAPITALS** up to a maximum of 30 words, plus state your contact details. Please use the order form provided.

EXCHANGE

Dinosaur requires dinosauric scanner e.g. JIL SX-400, Standard AX700, Realistic PRO 2045, value £85 each swop CB units & accessories or other items, lets chat. Tel: (01986) 896658 or E-mail: ozone3radio@hotmail.com

My mint Kenwood TS-530SP h.f. transceiver for best dual-band(144/433) mobile offered. Also for sale SOTA 144MHz 100W linear amplifier, mains powered, £75. Ian M0BZP, Cumbria, QTHR, QRZ.com. Tel: (01229) 582867 or E-mail ianrg@ic24.net

WANTED

AVO valve tester. Tel: Yorkshire (01482) 887938.

BC610 TX, BC610 a.t.u., BC610 BW coils, KW107, K109. Heathkit SB220. Heathkit balun type B-IU. TL922 3-500ZS valves. Tel: Taunton (01398) 361215 after 6pm or Sat/Suns.

Bug Catcher mobile whip antenna. G3NQX. Tel: (01772) 703957.

G2YL QSL card to exhibit with her home-built transmitter in the National Wireless Museum on the Isle of Wight. Douglas Byrne G3KPO, 52 West Hill Road, Ryde, Isle of Wight PO33 1LN.

Grid dip oscillator in good condition. Tel: France 0033-5-53826267 or E-mail: fbailey20@hotmail.com

Grundig International Satellit model 650 or Grundig 650 professional Rapid, good condition and also old Grundig valve radio new Marlborough model 3365 and Telefunken tuner-amplifier Opus studio model 2650 working if possible. H. McCallion, No 8 Strathard Close, Coleraine, Co. Londonderry, N. Ireland BT51 2ES. Tel: (02870) 343793.

HRO National HRO handbook in good condition. Geoff G3YVR, QTHR, Crawley, Sussex. Tel: (01293) 883253.

Kantronics KPC3 and Motorola i.c.s MC13175. Tony Moggridge. Tel: (01568) 708556 or E-mail: michaelandtony@onetel.net.uk

Old timer rebuilding 1960s Advance valve voltmeter model 77 .003V to 300V a.c. input, six valves 4 x 6AK5, 1 x ECF80, 1 x 6AQ5 requires manual, h/book, circuit, information. Buy or p/stat, OAP, thank you. George, Wirral. Tel: 0151- 339 7098.

Plug-in coil for Eddystone 358X receiver range E - 1.2 to 2.225MHz. Tel: Howard on (01756) 793555.

Racal h.f. receiver wanted by Racal collector, almost any model from RA17 to modern solid state. Prefer working order but all offers considered. Also wanted Racal accessories e.g. Panadapter, s.s.b. adapter, l.f. adapter, MA79 etc. Tel: Yorkshire (01482) 887938.

Signal Corporation Airband receiver, cash waiting. NIgel G40FO. Tel: 0208-9492317 or E-mail: baynesnweb@aol.com

Sony CRFV21, CRF320 communications receiver, any condition. Tel: John on (07976)384020 or 0121-704 2393.

Working Geloso converter 80-10m for OAP s.w.l. price and carriage paid. Tel: (01986) 873398 evenings only.

Yaesu CPU2500 2m (144MHz) f.m. trans. Trio 120V h.f. Trans Heathkit items wanted. Trans etc. Ray G4OWY. Tel: (01305) 777691 after 6.30pm please.

£1000 Sterling offered for Eddystone 1650 must be as new. Tel: Dublin, Ireland on 00-353-01 4536 452.

BARGAIN BASEMENT ORDER FORM

Please insert this advertisement in the next available issue of *Practical Wireless*.

❑ FOR SALE ❑ WANTED ❑ EXCHANGE

DON'T FORGET THE CORNER FLASH!!

Name .....

Address .....

.....

..... Post Code .....

Telephone Number .....

CARD NUMBER

Signature .....

Expiry date of card.....

My Subs Number is .....

(or mailer label).....

please write in block capitals

	(30)		

CONTACT DETAILS FOR ADVERT.

Please only write in the contact details you wish to be published with your advert, ie. do you want your name & address, or just your telephone number?

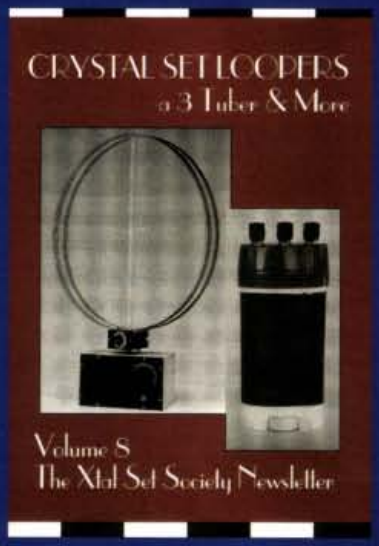
Your advert, you decide! ***PLEASE - No FAXed Ads!***

			(12)

Book Store

THE BOOKS LISTED HAVE BEEN SELECTED AS BEING OF SPECIAL INTEREST TO OUR READERS. THEY ARE SUPPLIED DIRECT TO YOUR DOOR. MANY TITLES ARE OVERSEAS IN ORIGIN.

BUY OF THE MONTH



Crystal Set Loopers A 3 Tuber & More

Place your order today!

This book is Volume 8 in the Xtal Set Society Newsletter series and this publication brings together projects previously published in the Society's Newsletters from January to November 1998. Projects featured include An a.m./f.m. Frisbee Crystal Radio, The Shortwave Looper, Loop with a Twist and much more. So what are you waiting for place your order and get building!

Crystal Set Loopers A 3 Tuber & More would normally cost £10.50 plus P&P but this month it can be yours for £10 inc. P&P UK, for overseas orders please add £2.50 P&P. Offer open until **10 July 2002.**

LISTENING

Airband

	pages	price	code
AIRWAVES 2002	144	£9.95	AIR22
AIRBAND RADIO GUIDE (abc) 5th Edition	112	£8.99	ABRG5
AIRBAND RADIO HANDBOOK (Haynes)	190	£12.99	ABRHB
AIR TRAFFIC CONTROL (abc) 8th Edition	112	£8.99	ATC8
CALLSIGN 2002	144	£9.95	CAL22
CIVIL AIRCRAFT MARKINGS (abc)	384	£7.99	CIVAIR
FLIGHT ROUTINGS 2002 Williams	160	£7.95	FR22
MILITARY AIRCRAFT MARKINGS 2002 (abc)	224	£7.99	MILAIR
NORTH ATLANTIC ROUTE CHART	740 x 520mm	£9.00	NAROUT
WORLD AIRLINE FLEET & SELCAL DIRECTORY + UPDATE	300	£16.00	WAFSEL
MILITARY AIR SCAN 2001	260	£14.99	MILSCN

Frequency Guides

FERRELL'S CONFIDENTIAL FREQUENCY LIST 12th Edition	514	£19.99	FERR12
GLOBAL BROADCAST GUIDE 2002	32	£2.25	GBGJA2
GUIDE TO UTILITY RADIO STATIONS 2002 20th Edition. Joerg Klingenfuss	580	£23.00	KFUTIL
PASSPORT TO WORLD BAND RADIO 2002	592	£15.50	PASS22
PROMA SCANNING SCENE CD	n/a	£4.75	PROMCD
RADIO LISTENERS GUIDE 2002	128	£5.25	RLG22
SHORTWAVE FREQUENCY GUIDE 2002 - 6th Edition. Joerg Klingenfuss	564	£20.00	KFSWFG
SUPER FREQUENCY LIST (2002) on CD-ROM. Joerg Klingenfuss	n/a	£14.00	KFSWCD
UK SCANNING DIRECTORY 8th Edition	700	£19.75	UK8TH
WORLD RADIO TV HANDBOOK 2002	680	£19.95	WRTH22

Scanning & Short Wave

BUYING A USED SHORT WAVE RECEIVER - New 4th Edition F. Osterman	78	£5.95	BUSWRX
RECEIVING (VALUE) STATION LOGBOOK (RSGB)	80	£4.25	RXLOG
SCANNERS 4 SCANNING INTO THE FUTURE Bill Robertson	245	£9.95	SCAN4
SHORT WAVE COMMUNICATIONS Peter Rouse GU1DKD	187	£4.50	SWCOM
SHORTWAVE RECEIVERS PAST & PRESENT 3rd Edition	450	£25.95	SWRXPP
THE SUPERHET RADIO HANDBOOK I.D. Poole	104	£4.95	BP370

Weather

FAX & RTTY WEATHER REPORTS Philip Mitchell	88	£11.50	FXTWR
WEATHER SATELLITE HANDBOOK 5th Edition. Dr Ralph E. Taggart WB8DQT	192	£15.50	WSATHB
WEATHER REPORTS FROM RADIO SOURCES. 3rd Edition. Philip Mitchell	32	£7.50	WRFRSO

Amateur Television

AN INTRODUCTION TO AMATEUR TELEVISION. Mike Wooding G6IQM & Trevor Brown G8CJS	156	£5.00	INTATV
THE AMATEUR TV COMPENDIUM. Mike Wooding G6IQM	104	£3.50	ATVCOM

Antennas/Transmission Lines/Propagation

25 SIMPLE AMATEUR BAND AERIALS E.M. Noll	63	£1.95	BP125
25 SIMPLE INDOOR AND WINDOW AERIALS E.M. Noll	50	£1.75	BP136
25 SIMPLE TROPICAL AND MW BAND AERIALS E.M. Noll	54	£1.75	BP145
ANTENNA FILE (RSGB)	285	£18.99	ANTFIL
ANTENNA IMPEDANCE MATCHING (ARRL) Wilfred N. Caron	195	£15.50	ANTIMP
ANTENNA TOOLKIT (inc. CD-ROM) Joseph J. Carr	214	£25.00	ANTOOL
ARRL ANTENNA BOOK 19th Edition	732	£24.00	RRAB19
BACKYARD ANTENNAS Peter Dodd G3LDO	200	£18.99	BYANTS
BEAM ANTENNA HANDBOOK W.I. Orr W6SAI & S.D. Cowan W2LX	268	£8.95	BMANHB
BUILDING & USING BALUNS Jerry Sevick	125	£18.95	BUBALS
EXPERIMENTAL ANTENNA TOPICS H.C. Wright	70	£3.50	BP278
HF ANTENNA COLLECTION (RSGB) Edited by Erwin David G4LQI	233	£9.99	HFANTC
HF ANTENNAS FOR ALL LOCATIONS (RSGB) Les Moxon G6XN	322	£7.99	HFAFAL
INTRODUCTION TO RADIO WAVE PROPAGATION J.G. Lee	116	£3.95	BP293
MORE OUT OF THIN AIR (PWP)	112	£6.95	MOOTA
PHYSICAL DESIGN OF YAGI ANTENNAS (Hardback) D.B. Leeson W6QHS	200	£15.50	PDYAGI
RADIO AMATEUR ANTENNA HANDBOOK W.I. Orr W6SAI & S.D. Cowan W2LX	188	£8.95	RANTHB
RECEIVING ANTENNA HANDBOOK Joe Carr	189	£17.50	RXANHB
VERTICAL ANTENNAS W.I. Orr W6SAI & S.D. Cowan W2LX	192	£8.95	VERANT
VHF UHF ANTENNAS I.D. Poole	128	£13.99	VUANTS

Beginners/Novice/RAE

AMATEUR RADIO EXPLAINED. Ian Poole	150	£9.90	AREXPL
AN INTRODUCTION TO AMATEUR RADIO Ian Poole G3YWX	150	£4.99	BP257
AN RAE STUDENTS NOTEBOOK Bob Griffiths G7NHB	76	£6.95	RAESNB
FOUNDATION LICENCE NOW! (RSGB)		£3.95	FLNOW
HF AMATEUR RADIO. Ian Poole	120	£13.99	HFAR
RADIO AMATEURS EXAMINATION/END OF COURSE TEST PAPERS Ray Petri G0OAT	104	£13.95	RAECTP
RAE MANUAL (RSGB) 16th Edition	127	£15.00	RAEMAN
RAE REVISION NOTES (RSGB)	92	£5.00	RAERVN
SECRET OF LEARNING MORSE CODE Mark Francis	84	£6.95	SOLMC
THE NOVICE LICENCE STUDENT'S NOTEBOOK John Case GW4HWR	124	£6.00	NOVSTU
THE NOVICE RADIO AMATEURS EXAMINATION HANDBOOK Ian Poole G3YWX	150	£4.95	BP375
THE RADIO AMATEURS' QUESTION & ANSWER REFERENCE MANUAL. 5th Edition Ray Petri G0OAT	208	£13.95	RAQARM
TRAINING FOR THE NOVICE LICENCE A MANUAL FOR THE INSTRUCTOR (RSGB) John Case GW4HWR	101	£6.75	TNOVIM

To order either use the form on page 68 or please call the PW Book Store (01202) 659930 and quote PW 07

	pages	price	code
Call Directories			
PW UK/EIRE CALLSIGN CD		£4.75	PWCALL
RSGB YEARBOOK. 2002 Edition		£15.99	RSYB22
Design & Construction			
33 SIMPLE WEEKEND PROJECTS/CQ	68	£7.95	33SWP
COIL DESIGN & CONSTRUCTION MANUAL B.B. Babani	106	£3.95	BP160
LF EXPERIMENTERS HANDBOOK	112	£18.99	LFEXHB
PROJECTS FOR RADIO AMATEURS & SWL. R.A. Penfold	92	£3.95	BP304
RADIO & ELECTRONICS COOKBOOK (RSGB)	319	£16.99	RECOOK
RADIO RECEIVER PROJECTS YOU CAN BUILD	312	£20.95	RRPYCB
SOLID STATE DESIGN FOR THE RADIO AMATEUR (ARRL) Les Hayward W7ZOI & Doug DeMaw W1FB	256	£11.50	SSDRA
PRACTICAL RECEIVERS FOR BEGINNERS (RSGB) John Case GW4HWR	165	£14.99	PRRXFB
PRACTICAL TRANSMITTERS FOR NOVICES John Case GW4HWR	126	£12.50	PTXNOV
TECHNICAL COMPENDIUM (RSGB)	288	£17.99	RSTECO
TECHNICAL TOPICS SCRAPBOOK (RSGB). 1995-99 Pat Hawker	310	£14.99	TT9599
THE ART OF SOLDERING R. Brewster	84	£3.99	BP324
Shack Essentials			
AMATEUR RADIO MOBILE HB (RSGB)	114	£14.99	MOBHB
AMATEUR RADIO OPERATING MANUAL (RSGB)	257	£24.99	AROPM
ARRL OPERATING MANUAL 7th Edition	420	£18.50	RROPM
ARRL HANDBOOK 2002 79th Edition	1216	£28.00	RRHB22
AMATEUR RADIO (VALUE) LOGBOOK (RSGB)	80	£4.25	TXLOG
AMATEUR RADIO WORLD ATLAS (A4 size)	20	£8.00	ARWAT
GREAT CIRCLE MAP	400 x 400mm	£1.50	GCMAP
IOTA DIRECTORY 11th Edition (RSGB)	128	£9.95	IOTA11
QTH LOCATOR MAP OF EUROPE New Edition due approx. March	1080 x 680mm	£7.00	QTHMAP
RADIO AMATEURS MAP OF THE WORLD 2002 Edition due approx. March	980 x 680mm	£7.00	RAMAPW
RADIO COMMUNICATIONS HANDBOOK 7th Edition. Dick Biddulph/Chris Lorek	580	£29.99	RCOMHB
RSGB PREFIX GUIDE	34	£6.95	PFXGDE
Microwaves			
AN INTRODUCTION TO MICROWAVES F.A. Wilson	134	£3.95	BP312
MICROWAVE HANDBOOK - COMPONENTS & OPERATING VOL 1 (RSGB)	110	£12.00	MWHBV1
MICROWAVE HANDBOOK - CONSTRUCTION & TESTING VOL 2 (RSGB)	120	£18.99	MWHBV2
MICROWAVE HANDBOOK - BANDS & EQUIPMENT VOL 3 (RSGB)	140	£18.99	MWHBV3
QRP			
LOW POWER SCRAPBOOK (RSGB)	320	£12.99	LPSCRA
QRP POWER (ARRL)	188	£11.50	QRPPWR
INTRODUCING QRP Dick Pascoe G0BPS	48	£4.95	INTQRP
VHF & Higher			
ALL ABOUT VHF AMATEUR RADIO W. I. Orr W6SAI	163	£8.95	AAVHF
GUIDE TO VHF/UHF AMATEUR RADIO Ian Poole G3YWX	180	£8.99	GTVUHF
VHF/UHF handbook (RSGB) Dick Biddulph G8PDS	180	£22.00	VUHFHB
NOS INTRO: TCP/IP OVER PACKET RADIO Ian Wade G3NRW	356	£11.50	NOSINT

VINTAGE & WIRELESS

Crystal Sets			
THE XTAL SET SOCIETY NEWSLETTER Volume 1 & 2 Combined. Phil Anderson W0XI	96	£14.00	XTNL12
THE CRYSTAL SET HANDBOOK & VOL. 3 XTAL SET SOCIETY NEWSLETTER. Phil Anderson W0XI	134	£8.00	XTNL3
THE XTAL SET SOCIETY NEWSLETTER Volume 4. Phil Anderson W0XI	88	£7.00	XTNL4
CRYSTAL RECEIVING SETS & HOW TO MAKE THEM	124	£7.95	XTHTM
CRYSTAL SETS. The Xtal Set Society Newsletter, Volume 5. Phil Anderson W0XI	88	£7.00	XTNL5
CRYSTAL SET BUILDING & MORE	168	£10.50	XTNL67
CRYSTAL SET PROJECTS	160	£10.00	XTPROJ
CRYSTAL RADIO HISTORY, FUNDAMENTALS AND DESIGN P.A. Kinzie	122	£8.00	XTHIST
CRYSTAL SET LOOPERS, A3 TUBER & MORE Volume 8 Xtal Set Society Newsletter	128	£10.50	XTLOOP
Historical			
100 RADIO HOOK UPS 2nd Edition (reprinted)	48	£3.35	100RHU
1934 OFFICIAL SHORT WAVE RADIO MANUAL Edited by Hugo Gernsback	260	£11.85	1934SW
COMMUNICATIONS RECEIVERS - THE VACUUM TUBE ERA R.S. Moore	141	£17.95	COMRXV
MARCONI'S ATLANTIC LEAP (H/B)	96	£6.99	MALEAP
POP WENT THE PIRATES Keith Skues	568	£16.95	POPPIR
SAGA OF MARCONI OSRAM VALVE (Paperback) B Vyse	346	£25.00	SMOV
SEEING BY WIRELESS - THE STORY OF BAIRD TELEVISION Ray Herbert	27	£3.70	SBYWIR
THOSE GREAT OLD HANDBOOK RECEIVERS (1929 & 1934)	94	£6.95	TGOHRX
Valves			
HENLEYS 222 RADIO CIRCUIT DIAGRAMS (1924)	271	£9.95	222RAD
HOW TO BUILD THE TWINPLEX REGENERATIVE RECEIVER Lindsay	63	£6.75	HTBTRR
HOW TO BUILD YOUR FIRST VACUUM TUBE REGENERATIVE RECEIVER. T.J. Lindsay	127	£8.25	HTBFVA
HOW TO BUILD YOUR RADIO RECEIVER (A4) (Popular Radio Handbook No. 1)	100	£6.70	HTBYRR
HOW TO MAKE A NEUTRODYNE RECEIVER Webb	63	£5.95	HTMNRX
SECRETS OF HOMEBUILT REGENERATIVE RECEIVERS (Rockey)	127	£8.75	SHBRRX
TUBE SUBSTITUTION HANDBOOK	150	£15.50	TSUBHB

ELECTRONICS

BASIC RADIO PRINCIPLES & TECHNOLOGY Ian Poole G3YWX	262	£15.99	BRPRIN
ELECTRONIC PROJECT BUILDING FOR BEGINNERS R. Penfold. (BP392)	110	£4.95	BP392
GETTING THE MOST FROM YOUR MULTIMETER	102	£3.99	BP239
SCROGGIES - FOUNDATIONS OF WIRELESS & ELECTRONICS 11th Edition	292	£20.99	SCROGY
TEST EQUIPMENT FOR THE RADIO AMATEUR Clive Smith G4FZH	170	£12.99	TESTEQ

To order either use the form on page 68 or please call the PW Book Store (01202) 659930 and quote PW 07

To advertise on this page see the booking form below.

Classified Ads

Whilst prices of goods shown in advertisements are correct at the time of going to press, readers are advised to check both prices and availability of goods with the advertiser before ordering from non-current issues of the magazine.

For Sale

TRIO 940S HF TRANSCEIVER, VCI ATU, Handbooks, nice condition. £650 o.n.o. Tel: 0161 747 3316. G. Lovell G0JKQ, 217 Moorside Road, Flixton, Manchester M41 5SJ.

THE RF-KIT CATALOGUE. send 2x 2nd class stamps or browse www.rf-kits.demon.co.uk
Hands Electronics, Tegryn, Llanfyrnach, Pembs SA35 OBL. Tel 01239 698427.

QUARTZ CRYSTALS. 455.2kHz/£1.75. 1MHz/£2.95. 1.4MHz/£9.95. 4.0MHz/£0.25. 4.194304MHz/£0.10. 4.9152MHz/£1.70. 6.0MHz/£1.54. 7.025MHz/£3.95. 7.03MHz/£3.95. 8.9985MHz/£2.95. 9.0MHz/£2.95. 9.0015MHz/£2.95. 10.0MHz/£1.54. 10.106MHz/£3.50. 10.245MHz/£1.54. 10.7MHz/£1.54. 11.155MHz/£3.50. 21.040MHz/£3.95. 21.060MHz/£3.95. 28.060MHz Fund/£3.75. All 30pF, HC49. Matched X-tals, Filter Application. 9MHz & 10MHz ±50Hz £20/8.
1.4MHz USB/LSB Filters. £15.00
10.7MHz, 10kHz Filters. £10.50.
X-Tal Circuits, Applications Booklet. £5.00. Ceramic Resonators, Applications Booklet. £3.50. Add P&P: £1.50 + VAT.
IQ-Electonic Design.
Tel: 020-8391 0545.
Fax: 020 8391 5258.
E-mail: japj69@netscapeonline.co.uk

COPPER ISLAND CONSTRUCTION OUTFITS Build electronics circuits easily without etching or drilling. Full instructions enclosed. Just £17.95. Duncan Walters, 11 King George V Avenue, Mansfield NG18 4ER. Further information phone 01623 465443 www.copperisland.biz

VINTAGE SERVICE DATA - 1900 to 1970's - the largest library - est. 32 years - radio, audio, cinema, communications, military, television, test equipment, etc. Free catalogue/quote. Savoy Hill Publications, 50 Meddon Street, Bideford, Devon EX39 2EQ. Fax/phone 01237

Wanted

WANTED FOR CASH Valve or solid state communication receivers Pre-1980. Preferably working and in good condition. Non working sets considered also domestic valve radios. Items of Government surplus wireless equipment and obsolete test equipment. Pre-1965 wireless and audio components and accessories. Pre-1975 wireless and TV books and magazines. Also, most valves wanted for cash. Must be unused and boxed. CBS, 157 Dickson Road, Blackpool, FY1 2EU.
Tel: (01253) 751858 or Fax: (01253) 302979.
E-mail: chevet@globalnet.co.uk

Valves

VALVES GALORE Most valves available from stock. Otherwise obtained quickly. Please send SAE stating requirements or telephone.

VALVE & ELECTRONIC SUPPLIES Chevet Books, 157 Dickson Road, Blackpool FY1 2EU.
Tel: (01253) 751858 or Fax: (01253) 302979.
E-mail: chevet@globalnet.co.uk

VALVES:- OVER 50000 STOCKED Ham, Vintage, Military, Audio. SAE for FREE list to: Wilson Valves, (Jim Fish G4MH), 28 Banks Ave., Golcar, Huddersfield, West Yorks HD7 4LZ.
Tel: 01484 654650/844554/650725.
Mobile:- 07733 283084.
Fax: 01484 655699.
E-mail: wilsonv@zoo.co.uk
Visa etc. Fast & personal service.

VALVES AND ELECTRONIC COMPONENTS Large stocks. Send for list to: Stuart Scott, 19 Portway, Steying, W. Sussex BN44 3QF.
Tel/Fax: 01903 815118.
E-mail: triumph.76@btinternet.com

VALVES WANTED NEW AND BOXED!! KT66 GEC £35, KT88 GEC £60, EL34 & EL37 Mullard £27, EL84 £4, DA30, DO30, PS25 all at £120 each. PX4 globe shape £70. DA100 GEC £150, ECC83 Mullard £5, GZ32 & GZ34 Mullard £10, ECC32 & ECC33 Mullard £15. Other types wanted.
Colomor (Electronics) Ltd.
Tel: 01403 786559.
E-mail sales@colomor.demon.co.uk

VALVES AND ALLIED COMPONENTS in stock - please ring for free list. Valve equipment repaired. Geoff Davies (Radio). Tel: 01788 574774.

TOP PRICES PAID
for all your valves, tubes, semi-conductors and ICs.
Langrex Supplies Ltd.
1 Mayo Road, Croydon Surrey CR0 2QP.
TEL: 0208-684 1166. FAX: 0208-684 3056.

Miscellaneous

INTERESTED IN VINTAGE TECHNOLOGY? New and previously enjoyed books and magazines. Send 2 x 1st class stamps to: Old Time Supplies, P.O. Box 209, Banbury, Oxon OX16 1GR or visit www.oldtimesupplies.co.uk

DISCLAIMER

Some of the products offered for sale in advertisements in this magazine may have been obtained from abroad or from unauthorised sources. *Practical Wireless* advises readers contemplating mail order to enquire whether the products are suitable for use in the UK and have full after-sales back-up available. The publishers of *Practical Wireless* wish to point out that it is the responsibility of readers to ascertain the legality or otherwise of items offered for sale by advertisers in this magazine.

Please photocopy this form if you prefer

ORDER FORM FOR CLASSIFIED ADS

PLEASE WRITE IN BLOCK CAPITALS

The prepaid rate for classified advertisements is 42 pence per word (minimum 12 words), box number 70p extra. Semi-display setting £13.90 per single column centimetre (minimum 3cm). Please add 17.5% VAT to the total. All cheques, postal orders, etc., to be made payable to PW Publishing Ltd. Advertisements, together with remittance, should be sent to the Classified Advertisement Dept., Practical Wireless, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Tel: (01202) 659920, Fax: (01202) 659950

Please insert this advertisement in the ..... issue of Practical Wireless (if you do not specify an issue we will insert it in the next available issue of PW) for ..... insertion/s. I enclose Cheque/P.O. for £..... (42p per word, 12 minimum, please add 17.5% VAT to total).

Name:.....
Address:.....
.....
.....
Telephone No.:.....
Box Number @ 70p: Tick if appropriate.....
Category heading:.....

Order Form

Photocopies of this page are acceptable

Check out our Web Pages at:
http://www.pwpublishing.ltd.uk

FOR ALL MAIL ORDER PURCHASES IN *PRACTICAL WIRELESS*

SUBSCRIPTION RATES

Practical Wireless – 1 year.

- ❑ £30 (UK)
- ❑ £38 (Europe Airmail)
- ❑ £42 (Rest of World Airsaver)
- ❑ £49 (Rest of World Airmail)

Special joint subscription with

Short Wave Magazine – 1 year.

- ❑ £60 (UK)
- ❑ £73 (Europe Airmail)
- ❑ £81 (Rest of World Airsaver)
- ❑ £93 (Rest of World Airmail)

Monitoring Times – 1 year (12 issues).

- ❑ £38 (UK)
- ❑ £43 (Europe Airmail)
- ❑ £49 (Rest of World Airmail)

BUY OF THE MONTH

❑ Please send me ..... copy(ies) of *Crystal Set Loopers A 3 Tubers& More* at the special price of **£10 inc.** P&P UK, overseas customers please add £2.50 P&P. Offer open until **10 July 2002.**

£.....

Book Orders

..... £.....

..... £.....

..... £.....

..... £.....

..... £.....

..... £.....

..... £.....

Binders: £6.50 per Binder
Postal charges:
UK: £1.25 for one item, £2.50 for two or more items.
Overseas surface: £2.50 for one item, £4 for two items, three or more add an additional 50p per item. Airmail prices on application.
Binders P&P: £1.25 for one, £2.50 for two or more.

GRAND TOTAL ..... £.....

Thank you for using PW for your purchases

PAYMENT DETAILS

CREDIT CARD ORDERS TAKEN ON (01202) 659930
between the hours of 9.00am - 5.00pm. Outside these hours your order will be recorded on an answering machine.

FAX ORDERS TAKEN ON (01202) 659950
or please fill in the details ticking the relevant boxes, a photocopy will be acceptable to save you cutting your beloved copy!

To: PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW

I enclose my Cheque/Postal Order* for £ .....
made payable to PW Publishing Ltd. (*Delete as necessary)
or please debit my Access/Visa/Amex card No.

☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Expiry Date.....

or please debit my Switch card No.

☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐

Date.....Switch Issue Number (if on card.....

Switch Expiry Date.....

Signature .....

Name .....

Address.....

.....

.....

.....

.....

Postcode.....Daytime Tel. No.....

.....

Orders are normally despatched by return of post but please allow 28 days for delivery. Prices correct at time of going to press. **Please note:** all payments must be made in Sterling. Cash not accepted.

topical talk

Looking at projects from the past

The Editorial team continue to receive feed-back from readers, with their memories form the past 70 years of *Practical Wireless*...and even earlier!

Our 'team leader' has been kept really busy answering your correspondence regarding the points raised in Topical Talk. Indeed, the feed-back has been such that our Editor was kept busy dictating letters all through the first week of May. His audio typist (he just can't type quickly enough) brought him over 40 letters to sign one day...the majority having at least some mention of the vintage issue of *PW*.

Rob is kept very busy, and it's an appropriate moment perhaps to mention that whenever possible...he'll write to you personally. If however someone else can help you...it will be passed to them on your behalf. **And you can be sure all your letters are read with great interest**.

One letter - complete with the postcard view shown in **Fig. 1**, came form **Frank Osborn G2CVO**, who lives on Mersea Island in Essex. Of course, QSLs on postcards aren't that unusual, but that's no ordinary postcard Frank's used for his QSL! No Sir, not satisfied with what was available Frank took the photo himself and had it made into a postcard. It looks delightful on Mersea Island doesn't it?

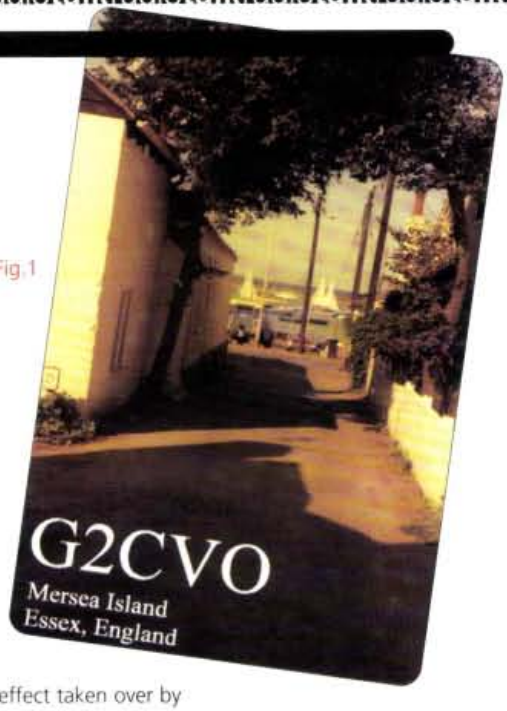


Fig.1

Popular Wireless

In his letter to the Editor Frank - **who's 94 years old and still active** (everyone in the *PW* offices sends their congratulations Frank - admiring your Nonagenarian stamina!) was responding to the request for more information on Tom Withers G3HGE of TW Communicator fame. Frank had known him in the 1950s, and although this information was helpful...the rest of the information he provided has sparked off another topic - regarding the *Popular Wireless* magazine which Frank remembers the other *PW*. (*Practical Wireless* absorbed *Popular Wireless* not long after its launch, and this of course explains why so many old timers thinks that our *PW* changed it's name once upon a time from Popular to Practical. Indeed, to make confusion even worse...both titles appeared on this magazine for some time in the early 1930s!

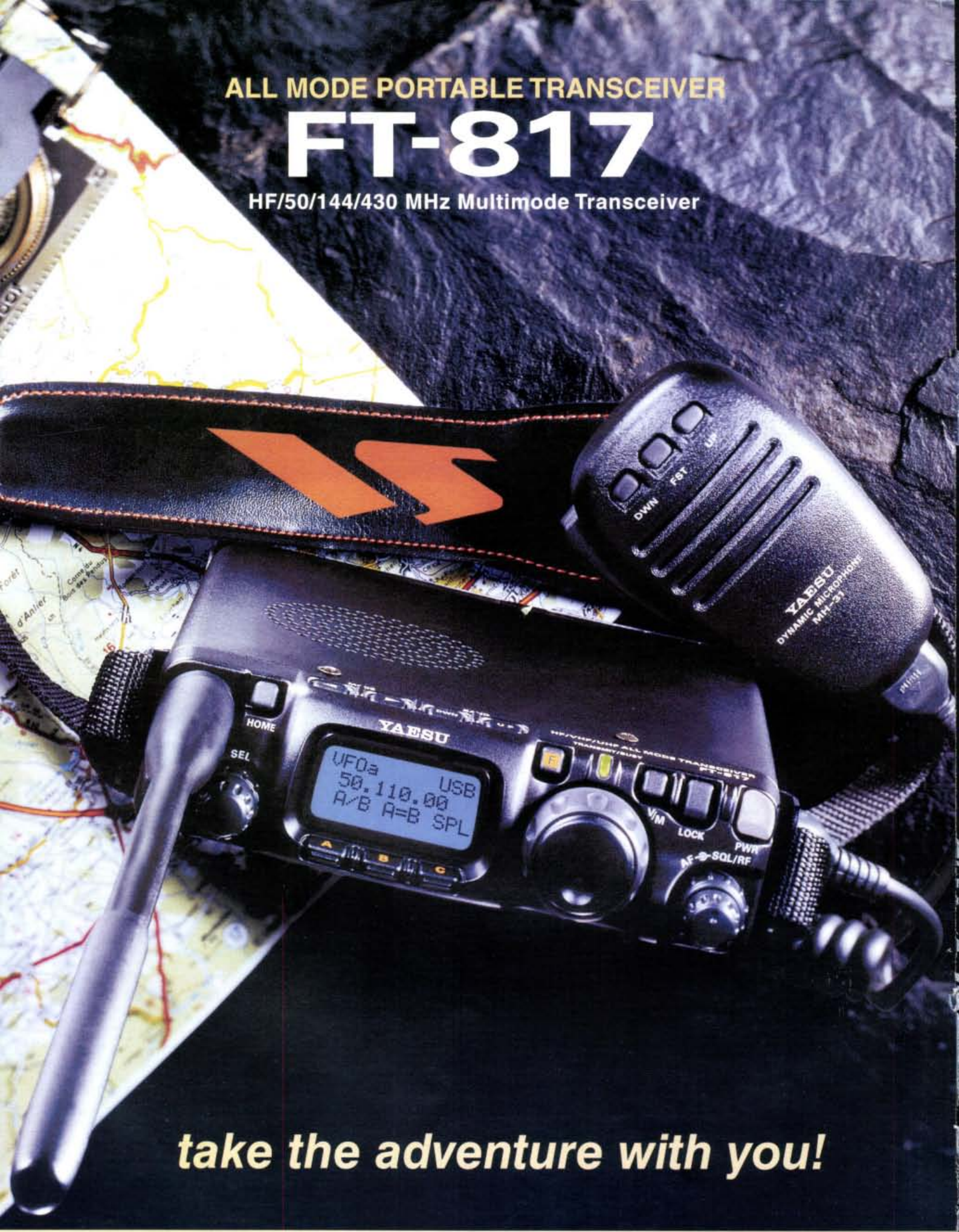
Running on from Frank G2CVO's comments on the back of his card (we hope to feature him in the magazine soon) the Editorial team would be interested hear if any reader built any of the original *Popular Wireless* projects which were, in effect taken over by *Practical Wireless*.

Additionally, Frank is the oldest (known) reader to contact us directly recently. We're left wondering...he's surely not alone? So, write in if you can enlighten the *PW* team!

In the meantime, everyone here looks forward to hearing of your own memories, particular those which started off a 'blueprint' projects, and especially if you've still got them in your shack, or have a photograph of your finished project...even if it was over 50 years ago! *PW*

YOUR SPECIALIST & LOCAL DEALERS

Index to Advertisers



YAESU